Amateur Radio

Volume 81
Number 8
August 2013
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WIRELESS INSTITUTE OF AUSTRALIA

HF QRP in VK7 wilderness

- Review: MST400 SSB QRP TxRx
- Ground systems for short verticals
- Bird proofing the cable

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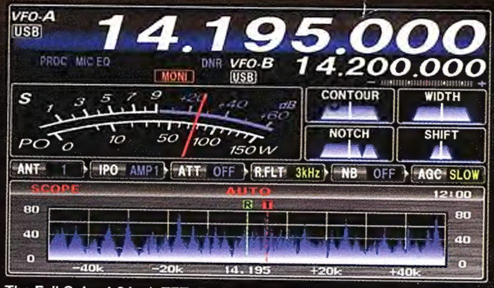

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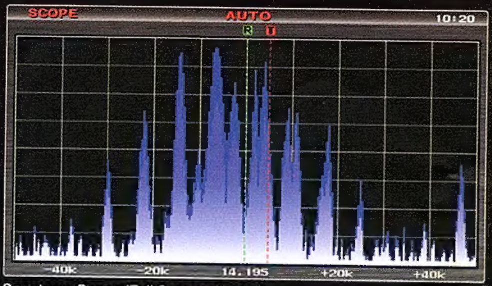

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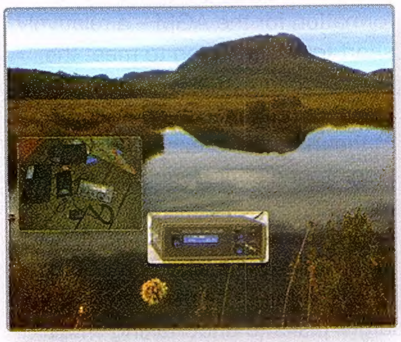

This month's cover

This month's cover main image is a view to Mt Pelion west from Pine Valley Moor, one of the many excellent views experienced by the team tackling the Overland Track in the Cradle Mountain - Lake Saint Clair National Park. Photograph by Gerard Warrillow VK3GT. See the story commencing on page 6. Inset photos show the portable equipment used on the Overland Track trip (left) and a view of the MST400 QRP SSB transceiver.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are welcome and will be considered for publication. Articles attached to email are especially welcome. The WIA cannot be responsible for loss or damage to any material. Information on house style is available from the Editor.

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Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's oldest
National Radio Society, founded 1910.

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Editorial

Peter Freeman VK3PF

A last minute rush

It seems that regardless of the amount of planning in the lead up to an event, some things need to be done in a rush at the last minute!

Such is the case once again here in Gippsland – I prepare this Editorial on the last possible occasion to have it included in this issue, on the day before the start of the annual GippsTech technical conference. First run in 1998, it is organised by the Eastern Zone Amateur Radio Club Inc., with me as the Conference Chair/Organiser. We have run the event every year, and even ran an extra "Special Edition" for the WIA Annual General Meeting in 2009, which represented the first occurrence of the newer formation for the AGM – a relatively short formal meeting to meet the legal requirements, an Open Forum for more general consideration of the many reports and finally a Conference considering aspects of amateur radio.

With any such event, there are many individuals who contribute to pull together all the details, from larger tasks to undertaking small tasks on the day. The end result is the product of the input from all involved: organisers, helpers, caterers and participants.

For this year, we have a record number of registered amateurs – 110! We also have several people registered for the Partners' Tour. For most of the amateurs the forecast of rain from late morning will not be much trouble, as we will be inside all weekend. I trust that the Partners' Tour does not suffer too much from the rain and hope that they all have included an umbrella in their bags! Such weather is always possible in Gippsland in July.

Hopefully we will be able to include a report on the event in an upcoming issue of *Amateur Radio*.

Organisational glitches

In preparing our July issue, I decided to modify a contribution from a Club. I deleted a small amount of text without consulting with the Club concerned. I would normally consult an author before any major editing of text, but as I recall, we had little time available between the receipt of the material and the deadline for preparation of the July issue.

I apologise to the WA VHF Group – it was not my intention to "censor" your material. From the information that I had to hand, it seemed as if an organisational glitch was being blown out of proportion. In my opinion, it did not warrant airing in this our national journal. I have since learned more about the events, and still feel that the issues should be sorted out between the parties involved. However, I do feel the need to make some key points clear on behalf of the WA VHF Group.

In the planning for the WIA Conference in May, the WA VHF Group was identified as the Host Club for the Friday evening opening dinner and supper event at the Club base on Wireless Hill. The Club believed that it had all the necessary arrangements in place for the event. With about a week to go to the event, the catering arrangements were taken over by another party. Thus the WA VHF Group was not responsible for the resulting faults in the catering arrangements,

Continued on page 5

WIA comment

Phil Wait VK2ASD

Licence Fees

One of the recurring themes in member's correspondence to the WIA is the level of fees charged by the ACMA for the renewal of Amateur licenses. Invariably the question also arises "why do we have to pay licence fees at all, when other countries (such as New Zealand) have abolished theirs".

Let's take the first question first – it's is a perennial question, much the same as asking why we pay the government taxes that we do for all sorts of things. Recently, WIA Board member Roger Harrison and Secretary David Williams wrote to a member regarding licence fees and charges, and I've used much of their reply in this President's Comment:

The WIA is acutely aware that the current Amateur licence fee of $73 (indexed by CPI) can be quite a bit to swallow as a lump sum payment, especially for pensioners and others on modest fixed incomes. Naturally, the WIA is not a spokesperson for the ACMA and the Institute is not able to explain on the ACMA's behalf *why* it charges $73 for the Amateur licence, other than to state the obvious, that it is government policy to charge a fee for apparatus licences.

However, the ACMA has released a publication titled *Apparatus licence fee schedule 5 April 2013,*(i) which describes the rationale for apparatus licence fees.

Quoting from this publication:

The ACMA uses a system of apparatus licence types to apply common licence conditions to categories of radiocommunications services. Most licence types have associated licensing options suitable for specific purposes. Fees charged vary according to the licensing option.

Then, on the matter of taxes and charges, the publication states:

There are two types of fees applicable to apparatus licences: administrative charges to recover the direct costs of spectrum management, and annual taxes to recover the indirect costs of spectrum management and provide incentives for efficient spectrum use. Indirect costs are those that cannot be directly attributed to individual licensees. These activities include international coordination and domestic planning and interference management.

On a current Licence Renewal Notice, the ACMA breaks down the Amateur licence fee into two components: (a) Total Charge, of $28; and (b) Total Tax, of $45.

So, from the above quotes (a) is the annual administrative charge to recover the **direct costs** of the ACMA's role in spectrum management, while (b) is an annual tax "to recover the **indirect costs** of spectrum management . . . that cannot be directly attributed to individual licensees", including planning within Australia, interference investigations and management, and international coordination (e.g. planning for and attending International Telecommunications Union meetings, World Radio Conferences, etc.).

Of course, we amateurs enjoy the privilege of considerable access to bands across the LF, MF, HF, VHF, UHF and microwave spectrum (determined by licence grade), to pursue our individual and collective interests as we see fit. In that context, the Amateur licence may be considered very good value for money.

In relation to the lack of pensioner discounts, many statutory costs (and regular increases) are a fact of life and, sadly, pensioner discounts relating to them are generally difficult to find. Our taxation system makes little or no provision for pensioners, especially where the costs are associated with a hobby (as distinctly different to medical treatment, as an example).

As a matter of interest, it was opposition to the licence fee of three guineas (63 shillings) for an experimenter's licence charged by the Federal Government in 1910 that led to the creation of the "Institute of Wireless", which subsequently became the Wireless Institute of Australia.

In 1910, the average weekly (skilled) male earnings were 60 shillings. The federal government in 1910 was charging more than the average male weekly wage! Translated to this era, based on average weekly male earnings today of $1489.10, the 1910 licence fee equates to some $1560! No wonder amateurs of that era were outraged!

For those able to afford a licence, it was a rich man's hobby. The age pension for males 65 years and older was then 10 shillings a week.

Continued on page 5

WIA news

Remembrance Day Contest

August 17th and 18th will soon be with us for this year's RD contest. This year the RD falls on the same weekend as the International Lighthouse weekend. Unfortunately the RD cannot be moved. Lighthouse stations are welcome and encouraged to submit logs for the RD while having enjoyed both activities.

One VK5 club will be doing both activities together and deserve praise for doing so. Remember that the new start and finish times are 0300Z or 1.00 pm eastern states time, which will let you have half a day free on both days of the weekend. Teams were very successful last year, so please notify Contest Manager Alan VK4SN of your team members prior to the start of the contest at *vk4sn@wia.org.au*

WIA Board meets and re-appoints Executive

At its first meeting this past week, the new Board of the WIA for 2013-2104 re-elected the outgoing executive that steered the Institute since October last year, since the untimely death of Michael Owen VK3KI. Remaining in their former roles are Phil Wait VK2ASD as President, Chris Platt VK5CP as Vice-President, John Longayroux VK3PZ as Treasurer, and David Williams VK3RU as Secretary.

For the first time, the Board got together via an online application known as "Go To Meeting". Investigated and set up by Treasurer, John Longayroux VK3PZ, it proved a great success, with directors joining the online meeting from locations scattered across the country. The system offers significant cost-savings.

The four newly-elected directors were welcomed by President Phil Wait VK2ASD, being Roger Harrison VK2ZRH, Ewan McCleod VK4ERM, Fred Swainston VK3DAC and Robert Broomhead VK3DN.

As an early item of business, the Board set about appointing directors to serve on the ten committees, which were constituted as an initiative of last year's WIA Board. You will shortly find the list of directors appointed to the various committees listed under the "About The WIA" menu on the WIA website, along with some words about the committees' functions. The committee system has a very important role to play in the functioning of the WIA, in serving the needs of members and the amateur radio community, as well as the development of new roles and functions for the Institute.

High on the Board's agenda for discussion at its first meeting were the Foundation licence Review, which is on-going and with many issues to consider, the Institute's next steps in progressing the WIA submission to the ACMA concerning retention of spectrum at 2300 MHz, and progress with the High Power trial, which is under way.

If members haven't already noticed, the new MEMNET system went live on the first of June. You will recall that MEMNET is a cloud-based membership management system that enables membership access online to WIA services and facilities, and has the ability to provide a targeted information service to members depending on their interests and activities. The new Board discussed various aspects of MEMNET's implementation, its functioning and how it develops in meeting the Institute's goals for it.

2013 IARU HF World Championship Contest

The 2013 IARU HF World Championship Contest takes place annually on the second full weekend of July, beginning at 1200 UTC on Saturday and ending at 1200 UTC Sunday (13-14 July 2013).

Both single and multi-operator stations may operate for the entire 24 hour period. All licensed amateurs worldwide are eligible to participate in this contest. The objective is to contact as many other amateurs, and especially IARU member society HQ stations, around the world.

The 160, 80, 40, 20, 15 and 10 meter bands may be used. Multipliers are the total number of ITU Zones plus IARU member society HQ stations worked on each band (not mode).

Region 3 has 29 potential society stations. Last year nine societies participated in the contest from Region 3. IARU officials represent a maximum of four multipliers per band (AC, R1, R2 and R3). Regional EC members who are not AC members must use the designator "R3".

The complete rules of the championship can be found at *http://www.arrl.org/iaru-hf-championship*

This year there is an added incentive for an amateur from Region 3 as it will be the first time the Michael Owen VK3KI Award is issued for the Region 3 amateur who receives the highest number of points during the championship.

Changes to the Outwards QSL Service

Two changes have been made to the Outwards QSL Service.

New Outwards QSL Address
Outwards QSL Service
PO BOX 66
Boolaroo
NSW 2284

QSL Service guidelines for special event stations

A WIA Member is entitled to a free outwards and inwards QSL service. The QSL service is free for special event stations, DXpeditions, IOTAs etc. operated by WIA members or by WIA affiliated Clubs. However, **all** operators need to be WIA members or the operation needs to be sanctioned by a WIA Affiliated Club.

Inwards QSL cards will continue to be available for non-members at the convenience of the QSL service.

WIA comment

Continued from page 3

An amateur licence would have cost more than 10 weeks pension. No wonder there were many "pirate" operators experimenting with wireless telegraphy.

In 1945, the Amateur licence fee was one pound 10 shillings, which, compared to 1945 average weekly male earnings, equates to $406 today! Likewise, in 1964, the Amateur licence cost two pounds, which equates to $194 today!(ii)

To the second question, "why do we pay any fees at all", all I can say is, be careful what you ask for. The category of radiocommunications licence that Amateur licences fall under is called 'Apparatus Licences'. That is the same type of licence that covers other services such as land mobile, maritime, broadcasting, fixed point-to-point services etc. etc., and we amateurs are afforded the same legal status and protections under that licence category.

If the amateur service was changed to say a type of Class Licence Service (similar to the NZ General User Radio Licence), where no licence fees are payable, we could eventually find ourselves in the same status category as remote controls and garage door openers, which operate on a non-interference / no-protection basis. This to me sounds like a very slippery slope.

So, we at the WIA fully understand the difficulties many members face with increasing fees and charges from all quarters. Rest assured the Board monitors the licence fee issue very closely and the WIA will act in the interests of its members if licence fees escalate out of proportion to the CPI, but it is very much a double edged issue.

Phil Wait VK2ASD

(i) *www.acma.gov.au/theACMA/About/Making-payments/Apparatus-licence-fees/apparatus-licence-fees-acma*

(ii) *Australian Bureau of Statistics* (ABS); and
University of Melbourne Archives, *Buchanan and Brock Wages Books* (1870-1921).

Editorial

Continued from page 2

which resulted in around 20 people missing out on their evening meal and their supper. Clearly, this was a major organisational glitch!

From the information that I now have at hand, it is clear that further discussions need to occur to resolve issues that arose following this chain of events. I trust that all involved can work toward achieving a satisfactory outcome.

Cover photos

As I noted in my Editorial last month, we are looking for good quality, high resolution images as candidates for the cover of the 2014 Callbook or for this journal. If an image is to be considered for the cover of *Amateur Radio*, then it should ideally have an accompanying article.

You can find guidelines about both articles and images on the *Amateur Radio* pages on the WIA website, under the "For Members" tab.

Until next month,

Cheers,

Peter VK3PF

WIA Contest Website

Keep up to date with all of the major Australian contests, including rules and results, at the WIA Contest Website at:

www.wia.org.au/members/contests/about

The Overland Track- HF QRP in the VK7 World Heritage Wilderness

Stephen Warrillow VK3SN

Tasmania's wilderness area is rightly renowned as one of the most spectacularly pristine and beautiful landscapes in the world. The famous Overland Track winds through 82 kilometres of World Heritage National Park and entices walkers from all over the world. Over the course of seven days or so, walkers traverse high alpine plains, rugged mountains, deep wild river valleys and temperate rain forest. Throughout all of this, self-sufficiency is mandated such that everything required for a full week of walking must be carried. In February this year, we embarked in the Overland Track and brought along radio gear to add an additional dimension to our adventure.

We formed a team of five, including four amateur operators, VK3XDL, VK3FIRH, VK3GT and VK3SN.

Photo 1: The team on day two at Old Waterfall Valley Hut: David VK3XDL, David (Dad of VK3GT and VK3SN), Bronwen VK3FIRH, Gerard VK3GT and Stephen VK3SN.

Heading out into a wilderness area for a week requires considerable planning. All members of the group were highly experienced walkers and had access to the necessary gear. Between us we needed to carry tents, stoves, fuel, food, medical kit, survival gear, sleeping bags, navigational aids, clothing and, of course, radio gear. In addition, we required a week of food, which was non-perishable, nutritious and satisfying. Weight is an absolutely crucial consideration, as every item needs to fit in a pack and be lugged the whole way. This process of minimizing weight can become addictive, such that one member of the party (VK3GT) is now known as 'Gram-Man' for his obsessive checking of every item on a set of digital scales. Table 1 gives an outline of the gear required. For breakfast we had porridge and dried fruit with coffee. Lunch was flat bread with salami, cheese, nuts and fruit. Dinners included lamb curry, Mongolian beef, bolognaise pasta and stewed fruit, custard, pudding and chocolate. Once fully loaded, our packs ranged from 14 to 26 kg.

Pack
tent
sleeping mat
silk inner sheet
sleeping bag
folding bowl
folding plate
titanium mug
spork/cutlery
Teflon spatula
pocket knife
small titanium pot
large titanium pot
aluminium frying pan
pot lifter
fuel stove
fuel bottles with Shellite
water bladder
head torch
beanie
sunhat
socks and jocks
woollen T-shirt
thermals
Gortex parka
overpants
sun shirt
wind stopper vest
polar fleece top
micro towel
toiletries
hand sanitizer
toilet paper
sunglasses
sunscreen
lip balm
comprehensive first aid kit
matches
emergency blanket
GPS and map
compass
daypack – ultra light for side trips
pack liner
tent cord
boots and gaiters
scourer
bathers
insect repellant
camera
spare batteries
solar panel
lithium battery
KX3 and microphone
coax
balun
dipole
fishing line
leads and plugs
hand-helds and antenna
charging plugs.

Table 1: Packing list for an extended multi-day walk in wilderness regions.

Our radio gear was somewhat different to what we'd taken on previous trips. This time we took an Elecraft KX3, a compact lithium ion battery, a 20 W folding solar panel and a full size 80 m dipole fed by mini-coax through a QRP balun. Once again, the key requirements were low weight and reliability. The station provided full HF coverage at up to 10 W and the ability to fully charge the battery each day. The KX3 has been extensively reviewed elsewhere and we agree that it is a remarkable piece of gear which really does set a new bench mark in QRP capability. In addition, we carried several VHF/UHF hand-helds for liaison within the team and for use on repeaters from the higher peaks.

The overnight ferry from Melbourne to Devonport provides an excellent link to VK7. We took a vehicle across to provide transport to and from the Cradle Mountain end of the track. Despite a bit of swell, the passage was a lot of fun. Our first day began with a drive from the ferry terminal to Cradle Valley. En route, we purchased stove fuel due to restrictions on its carriage on the ship. We arrived at the park entrance and registered for the trip. All walkers must be registered with a permit for the day of departure to regulate numbers of hikers setting out on the track each day. After a final gear check, we set out from Ronny Creek on the first stage of our journey.

Day one involved climbing from Cradle Valley up alongside Cradle Mountain and Barn Bluff to the highest point on the main track. This is steep and challenging walking, but the effort is well rewarded with amazing views across alpine plains and craggy peaks sculpted by ancient glacial activity. Once the wind faded away, we enjoyed pleasant sunshine as we wandered across heathland to Waterfall Valley for our first night. Here we were lucky enough to find the old hut empty and set ourselves up. Several wombats, wallabies, echidnas and a quoll made inquisitive visits during the afternoon as we relaxed and made dinner. Setting up the antenna involved flinging fishing line into nearby trees in order to haul up the dipole and took only a few minutes. That evening, we worked stations across several states on 40 and 80 m, including our families in Melbourne. The gear worked brilliantly and drew the attention of a fellow hiker who happened to be a visiting amateur from the US

Photo 2: View to Mt Pelion west from Pine Valley Moor.

who was suitably impressed by the capability of our set-up. Late that night we crawled into our sleeping bags and slept well after the efforts of the day.

Our second day on the track was bright and sunny. This was the easiest day of the walk (only 12 km including side-trips) and minimal climbing. On the way to Lake Windermere, we visited Lake Will and had a quick swim on an empty sandy beach. Our destination was reached by early afternoon and after erecting the tent, we swam in Lake Windermere, including a trip out to a small island in order to sign the visitor's log. Once again, we set up the radio gear while the panels charged the battery. 40 m was alive in the afternoon and 80 m gave excellent results after dark. As well as catching up with news from home and providing our own updates, we were able to get detailed weather reports for the track. These indicated we were in for unusually good weather and were eagerly received by other walkers at the camp.

The third day of the Overland is big. It involves walking across Pine Valley Moor before dropping down to the lowest point of the track, crossing the River Forth and climbing back up again to Pelion Plains. A major effort is required to achieve this feat. As well as the changes in altitude, the track heads straight through some serious bogs and the mud reaches more than knee deep. We marvelled at the massive Mt Pelion West and drank from some of the purest springs in the world. The Pelion Hut site is nestled in tall timber country and looks across grassy plains towards the spectacular Mt Oakley. The swim in a nearby creek was welcome after a hard 17 km walk and we spent an hour or so fossicking for fossils amongst the river pebbles. Radio activity was rather successful that night, but pesky mosquitoes and leeches caused us to limit the time spent out near to where we had erected the antenna. This was probably the best star-gazing opportunity and we spotted many constellations as well as satellites and a few meteors against a brilliant Milky Way.

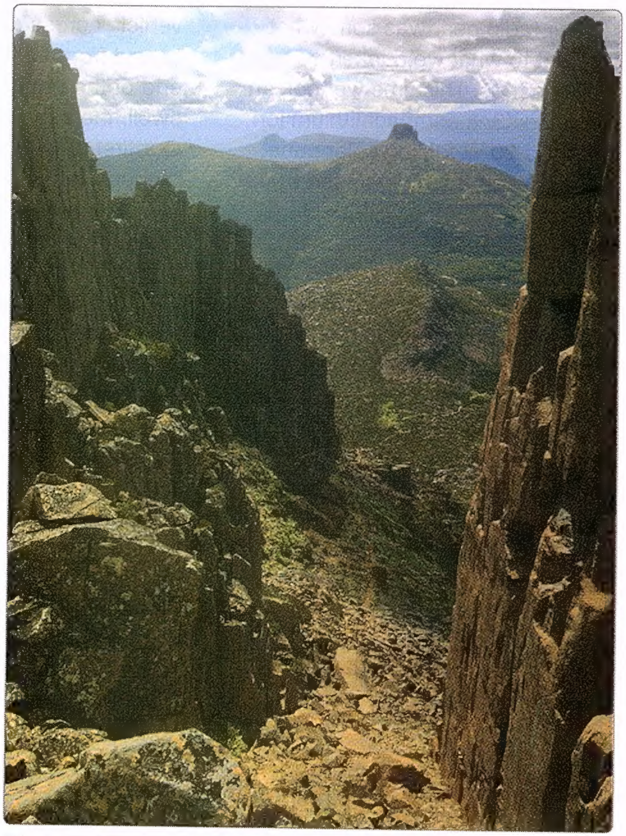


Photo 3: View to Mt Pelion East from near the summit of Mt Ossa.

Day four of the Overland Track includes a not to be missed side trip to Mt Ossa. This is the highest peak in VK7 and provides views which include roughly a third of the state. We set out early and reach Pelion Gap by late morning. After leaving our packs, we headed up Mt Doris for lunch before proceeding up Mt Ossa. This is a truly amazing mountain, which requires anyone keen to reach the summit to clamber up tiered dolerite boulders. From the summit, almost the entire length of the Overland Track can be seen and one is left gasping at the extraordinary rugged beauty of the mountainous vista. It is also an excellent spot for VHF radio work and we made time for several good contacts on two metres and worked APRS. The bright sun took its toll on the long walk down and we were delighted to find a tiny spring between a couple of massive boulders to quench our thirst. On arriving at Kio Ora campsite, we once again set up our tents and HF dipole before having a swim in the icy creek. Despite a less than optimal antenna set-up this night 80 m was cracking and we were impressed at how 'forgiving' this band is for low power and compromise antennas.

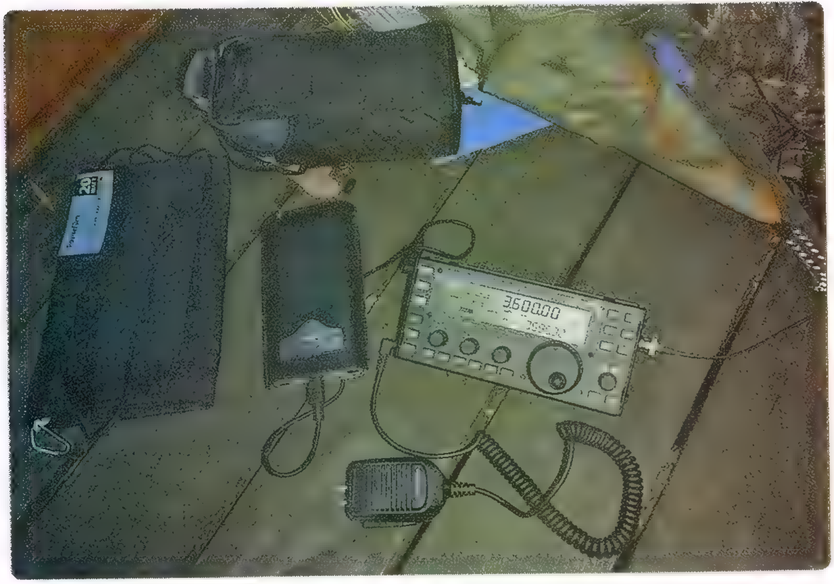
The fifth day took us alongside the Mersey River and we visited three amazing waterfalls. The steep gorges required us to drop down from the main track and are quite an effort to reach. The walk is well rewarded though and the Hartnett Falls had a most welcome deep pool of freezing water near the top. Before lunch we had a great swim and then headed up over the Du Cane Gap. From this point, we had crossed a watershed and rivers flowed south. The walk down to Windy Ridge tested our blistered feet somewhat and we were rather pleased to reach the campsite and set up to boil the billy. Setting up the dipole was once again rather tricky. In the end, we strung it up along the track itself, fortunately quite high so that it was well clear of any other walkers. Despite heavy timber and being at the bottom of a steep sided valley, 20, 40 and 80 m all worked pretty well and good light kept our battery well charged. We watched the sun setting behind the Acropolis and other marvellously named rocky ridges.

Our final day of walking involved heading across a flattish 10 km section of the track to the northern end of Lake St Clair (Australia's deepest lake). Mt Olympus began to loom in front of us as we approached Narcissus Point and our last camp. The final approach involved crossing a suspension bridge, which sways perilously across the river and is rated for only one walker at a time. This is tall timber country and setting up the antenna was rather easy. Our routine was well established by this stage and we set up the solar panel to charge the battery before heading to the river for a swim. By this stage of the trip, the weather felt rather warm and the march flies were well and truly a force to be reckoned with! Escaping both in the cool water was magical. We were able to set up our station in the hut and had a great time on HF before and after dinner. We had several dedicated supporters who had kindly kept regular skeds during our week of walking. Special thanks to all the VK7 amateurs who offered regular encouragement and news and also to VK3COW who provided superbly reliable weather updates and assisted in managing some of our more challenging contacts – thanks so much Nic!

Photo 4: The suspension bridge near Lake St Clair.

Our last day was rather civilized. We packed up our gear and caught the Ida Clair ferry to Cynthia Bay at the southern end of the lake. After a refreshing local brew, we boarded our charter bus to begin the three-hour drive back to Cradle Valley via the west coast. We got into our own car at the Cradle Mountain Visitor's Centre late in the afternoon and then drove up to Devonport. Before boarding the ferry, we sought out the city's best coffee and began to review the trip. We'd enjoyed outstanding weather and spent a week in some of the world's most amazing wilderness. Our gear (and feet) had stood up well with no failures or injuries. We had managed to work stations both local and distant every afternoon and evening using ultra-light basic antennas and low power. The batteries had barely shifted from nearly full capacity and had also kept various other devices charged (head torches and GPS gear). One again, amateur radio had been an integral part of our adventure experience and provided some welcome peace of mind that we had reliable communications in the event of an emergency. The Overland Track is a wonderful experience that we can highly recommend to anyone with reasonable fitness and a sense of adventure.

Photo 5: The radio gear – solar panel (folded), lithium ion battery, KX3 and carry bag.



Now…, time to start planning for the next trip!

The OzQRP MST400 SSB QRP transceiver kit - A user review

Peter Parker VK3YE

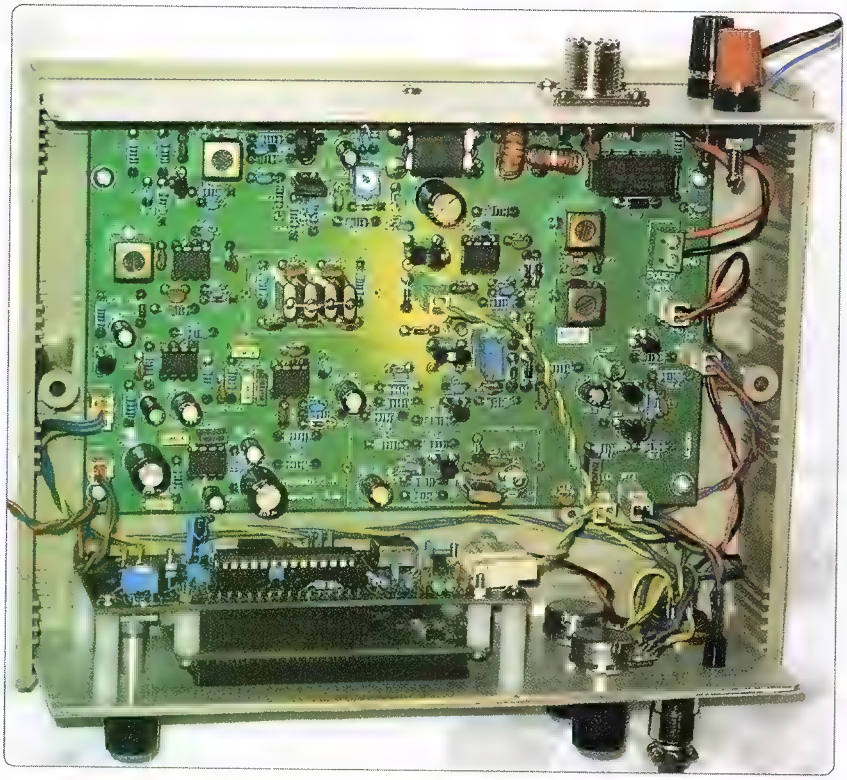
There's much to be said for having a one or two band transceiver for portable use. They're often smaller, lighter and cheaper than fully featured rigs. Power consumption is also lower, allowing longer life if on batteries. Then there's the yearning that many amateurs have to assemble their own transceiver. Not everyone will build a rig from scratch, but more will try it from a kit of sound design.

Photo 1: The front panel of the MST400.

Description

The OzQRP MST400 is an Australian 40 metre SSB transceiver kit designed and marketed by Leon Williams VK2DOB. It is part of a family that includes the MST800 (80 metre version) and a DDS VFO, suitable for many HF radio applications.

Photo 2: Inside the MST400.



The MST400 is a single conversion transceiver circuit. It is of conventional design, using the NE602/SA612, LM386 and IRF510 arrangement familiar to constructors. IF is 10 MHz, with use made of a ladder crystal filter. The kit comes as SSB only, though a CW modification should be possible. RF power output is approximately five watts.

All parts, except for the VFO, are mounted on one large printed circuit board which appears of excellent quality. The VFO signal can be provided either from the OzQRP DDS or your own unit. If you choose the former you'll have the benefit of good frequency stability, easy detented tuning and a large, clear display showing frequency, voltage and tuning step (10, 100, 1000 Hz steps available).

The kit comes in short-form. This means that you get the printed circuit board and a few major components. The rest of the parts must be sourced separately. Most but not all are available from Jaycar, meaning that you may need several suppliers to complete the kit.

A comprehensive 33 page manual is available at *ozqrp.com* so would-be builders can check the kit is suitable before purchasing. This is a high-quality production, with many photos, diagrams and schematics. The only thing I thought missing was a page on obtaining some of the less common parts and recommended suppliers.

The review unit was sent pre-built, so I cannot comment on how it went together. However if built as described, you will end up with a professionally working and looking unit as the tests and pictures demonstrate.

Testing

I did the following tests. Most need little or no other equipment to perform and apply equally to any other transceiver you're thinking of buying.

Receiver sensitivity: Good. The receiver was taken to a quiet beachside location. A wire antenna was plugged in. The significant increase in noise indicates sufficient gain and sensitivity.

Receiver internal noise: Very low. Little noise came out of the speaker after the antenna was disconnected and the volume set to maximum. With no RF or IF amplification, this design has most gain in the audio chain.

Strong signal handling: Adequate. No signals strong enough to overload the receiver were heard during a week of casual operating. While the NE602/SA612 used is weaker than other types of mixers, the receiver's lack of additional RF and IF amplifiers would aid performance compared to other designs.

Internally-generated spurious signals (birdies): None heard. For this test the antenna was disconnected and the receiver tuned across the band with the volume set to maximum.

Adjacent channel rejection: Adequate. Very strong SSB signals could just be detected 5 kHz away. The MST-400's selectivity is not quite as sharp as a good 'black box'. Nevertheless it is satisfactory in all but the most hostile receiving conditions.

Opposite sideband rejection: Adequate. Here I tuned to a strong AM signal on 7125 kHz. Tuning 1 kHz up produced the expected loud carrier. Tuning 1 kHz the other side of zero beat gave a much weaker carrier, which ideally shouldn't be audible. Again this is not a problem in practice.

Automatic gain control: None provided.

Receiver audio quality: Excellent, even with the small internal speaker. There was no audible distortion when the volume was turned up. There is sufficient volume to fill a quiet shack or portable location, but not a noisy vehicle.

Receiver VFO-generated noise: None audible. While a risk with synthesised VFOs, digital displays and inadequate shielding it is a credit to the designer that none was detected in the review unit.

Frequency accuracy and stability: Spot-on. No drift noted. No variation when the cabinet was thumped.

Transmit power output: At least four watts.

Transmit audio quality: Good. A rocking armature telephone earpiece provided sharp and punchy audio effective for low power communication.

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On the air

I tested the MST400 over two weeks both from home and away.

It was a pleasure to use. Frequency stability, ease of tuning, display clarity, receive audio quality and smooth transmit/receive switching were all excellent. Contacts were made Australia-wide with favourable audio and strength reports. DX working should occasionally be possible with a good antenna and location, but 40 metres is generally an under 3000 km band at low power levels

With good basic RF performance confirmed, all that's left to test are usability and ergonomics. Perhaps the biggest difference between operating the MST400 kit and commercially made rigs is its lack of receive AGC. This is especially apparent at a quiet waterside location where signals range from very weak to very strong and there is little local noise to compress dynamic range. In such circumstances you're often reaching for the volume control, especially in group contacts. As well as being uncomfortable, this can attract unwanted attention if operating from a public place.

Wearing headphones and setting the volume low so that band noise is only a gentle hiss partially overcomes this by exploiting the ears' natural wide dynamic range. Otherwise consider adding AGC, even if only to the audio stage (more complex receivers also control the RF and IF amplifier stages). Numerous audio AGC circuits are available on the web and there will be room to add it if the recommended case is used.

I've always adjusted a radio's tuning with my right hand. All other rigs I've known have the tuning knob either below or to the right of the dial or display, whereas the MST400's is on the left. You'll soon get used to it, but again it's something to consider when deciding where to position controls in projects.

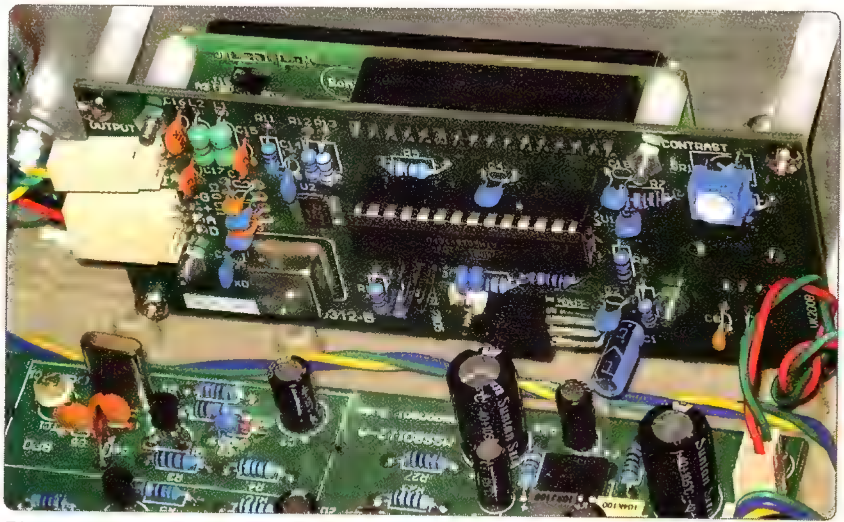

Photo 3: The DDS VFO board of the MST400.

The test unit was clearly designed for home station use. No attempt has been made at miniaturisation and the controls are designed for a shelf about eye height. Because this is a short-form kit, the builder has flexibility with the case and mounting. For instance a top-facing display, controls and speaker may be better for a 'trail-friendly field radio' format, where both radio and operator are usually on the ground. The low receive current consumption would make the MST-400 ideal for such solar or portable stations.

Conclusion

The OzQRP MST400 is highly recommended for the experienced constructor willing to source the parts and assemble an advanced level kit. Once finished, you'll have a high quality QRP SSB transceiver capable of contacts near and far.

Further information, including the assembly manual, can be found at *ozqrp.com* while a demonstration appears at *youtube.com/vk3ye* Thanks to Leon Williams VK2DOB of *ozqrp.com* for the loan of the review unit.

Photo 4: Driver and power amplifier of the MST400.

Over to you

Dear Editor

The letter from VK3BUF in the July AR interested me as, like many amateurs, I combine machining with my amateur radio activities.

The British Standard Brass (BSB) thread is indeed 26 tpi but it was used in many applications with many diameters, not just gas-pipes. Standard brass tube has a constant wall thickness, irrespective of its diameter, so the thread depth (determined by the pitch, in this case 26 tpi) should be the same for all diameters.

It is a Whitworth form thread, i.e. 55 degrees as against the 60 degrees of the Unified National series.

British Standard Cycle (BSC or BSCy) thread is 26 tpi in its 5/16" form and has a 60 degree thread form. I've measured the sole mobile-mount that I have and it is a 60 degree thread so it is BSC. BSC was used in motorcycles and bicycles; it is no longer used in motorcycles but many bicycles made today still use that thread standard, notably in the bottom bracket.

The thread might also be called Unified National Special (UNS) which covers threads with the 60 degree UN thread form but with pitches different to the standard UNC, UNF or UNEF.

I don't know why the 5/16"-26 thread was adopted for mobile antenna mounts or, indeed, if it was ever formally "adopted" by an industry body but, once it began to be used, there was no turning-back.

That is why cycle threads continue to be used; replacement parts must fit.

Although I haven't tried it I think that M8x1 (metric fine) would probably fit but correct taps & dies for 5/16" BSC are available fairly readily; perhaps not at the local hardware store but bicycle and model supply places keep them and, of course, they may be found on a certain auction site.

There have been problems in recent times with N and UHF connectors. The standard thread on these is, since they originated in the US, 5/8" – 24 UNEF but M16 x 1 mm has been used by some makers, probably through careless copying of a possibly-inaccurate sample rather than consulting the relevant standard. The metric thread is close but not close enough and there have been problems when the two conflicting threads are mated.

The most striking example of standardisation on a thread is the ¼" thread found under virtually every camera (save large ones which use 3/8") and said to be the most-used thread in the world. It began as ¼" Whitworth (55 degrees) and has morphed into ¼" UNC (60 degrees) as the 55 degree thread form slowly disappears.

Loads on such threads (tripod or flash usually) are not high and the loss of strength or locking ability inherent in mating, say, an old (55 degree) female camera thread to a new (60 degree) male tripod thread is not significant.

Sir Joseph Whitworth first proposed standardisation of threads in 1841 (http://en.wikisource.org/w/index.php?oldid=1843533); his intentions were good but we still battle with thread compatibility.

Regards,

Kerry Power VK2TIL

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Allen Fairhall VK2KB (SK) – a notable Australian amateur

Peter Wolfenden VK3RV

Allen Fairhall VK2KB (SK).

Allen Fairhall was born on 24 November 1909 near Maitland, in the Lower Hunter Valley of New South Wales. He was educated at the East Maitland Boys High School and later at the Newcastle Technical College. After serving an apprenticeship as an electrical fitter at the Walsh Island Dockyard, Newcastle, he became a qualified tradesman.

Allen became interested in radio as a schoolboy and later obtained his amateur radio licence. The first listing of his Sturdee St, New Lambton station address appears in the 1930 *Listener In Handbook*, which probably means that his licence was allocated some time in 1929 or even late 1928. One report has him broadcasting music on Sunday mornings in 1929. This would have been under his amateur broadcasting licence as was common and quite legal to do so in those days on 200 m.

In 1931 he founded a 'B class' commercial broadcasting station, 2KO Newcastle, operating with a 13 metre timber mast in his backyard and studio located in the family sitting room! The station commenced operation on 1 August 1931 with a power level of 25 watts, on 1410 kHz. Radio 2KO grew to be one of Australia's leading provincial radio stations and in 1942 Allen became President of the Australian Federation of Commercial Broadcasting Stations. He sold out his interests in 2KO during 1947.

After entering federal parliament as the member for Paterson in 1949, he held that seat until his retirement on 12 November 1969. He was appointed as the Minister for the Interior and the Minister for Works in 1956 by Sir Robert Menzies and in December 1961 was appointed the Minister for Supply. He was reappointed to that portfolio, with cabinet rank, after the elections of 1963. When the Holt government was formed in 1966, after the retirement of Menzies, Allen Fairhall was appointed Minister for Defence, a position he held until his retirement.

Allen continued his interest in amateur radio and attempted to promote the status of the hobby – or as he eloquently often put it – *'a pre-occupation', because in truth one can't call it a hobby – it is certainly vastly more than that!*

In his 1967 Remembrance Day Contest Opening Address (refer to the associated item), Allen attempts to clearly elevate amateur radio and its worth to society over the years. His speech is well researched and succinctly delivered recalling the value of the hobby to Australia since the earliest days. The speech clearly reflects his own deep passion for communication techniques and *'the pre-occupation'*, acknowledging its value to his own career by stating: *'and if today I hold a position of some authority in Government, it is because my interest in amateur radio first set me on the high road to that office.'*

Allen Fairhall VK2KB was knighted in 1970 after his retirement. Sir Allen Fairhall KBE died on 3 November 2006. He was indeed a notable Australian amateur!

References

Condolence debate, 27th November 2006, particularly speech by John Howard PM.

The Magic Spark (50 years of Radio in Australia) by R R Walker.

1967 RD Opening Address by Allen Fairhall VK2KB.

Honourable Allen Fairhall MP, Minister for Defence, VK2KB

1967 Remembrance Day Contest Opening Address (WIA CD 8)

Today in countless radio shacks in Australia, there is a ring around the calendar, for today is Remembrance Day.

May I begin by recalling one little remembered fact? It is that in the years before World War Two, there operated in Australia, a Royal Australian Air Force Amateur Radio Reserve. On the declaration of war in September 1939, the first additions to the man-power strength of the Australian fighting forces came from this group of radio amateurs. They were to be the first of a long line of radio amateurs who gave their services to their country at war. Some of them even gave their lives; and in Australia, we recall their sacrifice in this annual Remembrance Day amateur contest.

Since amateur radio contacts make friendships and develop international understanding and because in this field, lies the greatest possibility for the future of avoiding war, it seems to me that today's Remembrance Day activity and the promotion of contacts between Australians, is a fitting way indeed of serving the memory of those Australian amateurs whose names appear on the Roll of Honour. And yet, their service in the field was not the only service that amateur radio operators rendered to Australia in time of war.

The fact is that World War Two gave birth to much of the electronic technology which now seems to run our modern world. In a country which had not previously been deeply involved in the electronics industry, but found itself in war-time need; it was the home grown skill and experience of radio amateurs that largely filled the key roles in laboratories and factories, developing and building the equipment which their fellow amateurs operated in the field.

Perhaps nothing gives me more pleasure than this opportunity officially to acknowledge – even if belatedly, the magnificent contribution to this country's defence, which came from the amateur radio fraternity.

It has been my pleasure to be associated with you, officially through Defence and Defence Production and even more happily, may I say, as an active member of the fraternity; and if today I hold a position of some authority in Government, it is because my interest in amateur radio first set me on the high road to that office. But it does permit me to say, from experience, that the health and growth of amateur radio as an advanced technical activity is of the very greatest value indeed – not only to defence, but to national development when electronics means so much in our future.

In France, the government of today operates what might be termed 'a national radio school' recruiting to it thousands of technically minded young men, giving them instruction, supplying them with components for practical instruction and then, judging the results of their handy-work. All of this, the promoters say, is to make sure that the electronics industry of that country is not starved of the technical talent it needs. This is how one modern, technologically advanced country values electronic technicians. It really ought to be an example to everyone! But if we in Australia do not have that kind of school, then amateur radio could well be a powerful alternative; richly deserving of government encouragement in all of those avenues where government alone can help - and not least of these is in preservation of amateur frequency assignments.

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It is of course trite to say that this is the electronic age, but if anybody should be so foolish to regard that as merely another cliché, they need only cast their thoughts over today's activities in travel and transport, in research, design and production, in management, communications and in entertainment, for in all of these fields the great common denominator is the practical application of electronics. And to all of this, through his own efforts particularly, the radio amateur has an open door. For amateur radio is a quite unique pre-occupation and I call it 'a pre-occupation', because in truth one can't call it a hobby – it is certainly vastly more than that! To the technician, be he amateur or professional, amateur radio offers an avenue of scientific study where he can learn by doing. To the more advanced scientist, it offers opportunity to experiment within his resources and to discuss the result of his work with others of like mind. To others concerned with the philosophical values of human communication, the radio amateur has, in most cases, found the answer and this is not merely through the exchange of signals, pleasant enough in itself, but in that peculiar and valuable ability to exchange thoughts and ideas with contemporaries in the hundred nations who make up the democracy of amateur radio; and if there were nothing more than that in amateur radio, surely it would be enough. But a recent study by the Stanford Research Institute of the United States of America, discloses that of the 275,000 licenced amateur radio operators in the United States, not less than 110,000 of them are associated professionally in some phase of the nation's communications and electronics industry. Of these, at least 94,000 attribute their choice of a career to their experience in amateur radio.

Who can say how much of the technological leadership of the United States today, is attributable to the radio amateur? And again, who can say, here in our own country, that industrial growth, through electronics, has not been vastly enriched by the knowledge and experience of those who have chosen amateur radio as a recreational extension of their professional work? There is after all something tremendously unique about a recreational activity that acknowledges the active participation of half a dozen heads of state throughout the world. That numbers amongst its adherents the originators and the leaders of some of the world's greatest industries, that brings together the great confraternity of enthusiasts the research scientists of defence and industry and yet enlists into that same fraternity – on equal terms, the thousands who see in amateur radio a challenge to learning and an opportunity to friendship. Here is an arena where an operator's telegraphic key or microphone is a passport to instant friendship, were a call will bring, hopefully, an instant reply from a fellow in some distant corner of the world, who is immediately your friend Joe or Roberto, Francisco, Pierre or Toshadedi, whose name and conversation you will recall when next you meet.

In the whole radio frequency spectrum, there are preserved, unfortunately, only narrow amateur bands, safe we hope from commercialism, but free for the peoples of the world to talk to each other in mutual interest and friendship. Kilocycle for kilocycle, there is no piece of the spectrum which contributes so much to the warmth of international understanding, or to the exchange of information as do the amateur radio bands.

It may be that the days when amateur operators contributed to the development of new techniques and invention have been overtaken by the enormous growth of technology, to which their early efforts made such magnificent contribution. Today real discovery has moved into the well and expensively equipped laboratories; but the radio amateur has a unique opportunity to apply technology, to test theory and enjoy the doing of it, for surely amateur radio is the most rewarding and satisfying of technical activities.

So that, in the contest which is about to begin, we will remember, not only our fellow amateurs who served their country in war, but equally, those who enriched their experience, then, devote their talents to a young Australia on the way to industrial greatness.

It is my pleasure to declare this 1967 Remembrance Day Contest now open.

Plan ahead

14 September	**Sunshine Coast Amateur Radio Club's annual HAMFEST**
19/20 October	**JOTA/JOTI**
20 October	**Ballarat Amateur Radio Group Hamvention**

Rapid deployment ground systems for short vertical antennas

John Morrissey VK3ZRX

Photo 1: Test setup with 'squid pole' antenna, trailer and test equipment. A test radial is just visible below the rear corner of the trailer.

Introduction

The topic of this article begs the question – why use vertical antennas at all for rapid deployment, especially when they need a ground system? Operating portable on the lower HF bands is a popular activity – field days and Summits On The Air (SOTA) activations come to mind.

Amateur radio also has a unique and valuable capability for emergency communications (emcom) systems. This is the ability to deploy reliable, robust and secure HF radio systems on a 24/7/365 basis. RECOM have operated reliable digital HF emcom systems around the clock for nearly 15 years in support of emergency activities by the Red Cross and other agencies. Optimal propagation usually requires use of the 40 or 80 metre bands.

Both of these activities require HF antenna systems which are easy and fast to deploy and recover, provide effective communication, and above all are safe for the operator and other people. Portable operation often involves members of the public nearby; emcom activation often means working on a crowded site with other agencies (and their communications systems) nearby.

Under these conditions, use of full size dipoles for the 80 or 40 metre band is fraught with difficulty. Suitable supports are required and there are hazards created by RF fields, trip hazards from guys for masts, and so forth. Even with suitable supports, erecting a full size dipole can be difficult with people in close proximity.

Under these circumstances a vertical antenna has considerable advantages. However a vertical antenna needs a grounding system to perform reasonably well. Another aspect is that a compact, efficient and high-Q antenna can be useful to reduce overload problems from other nearby transmitters – but this requires an even better ground system to achieve reasonable efficiency.

This article outlines some investigation on what might be termed compromise grounding systems – systems which provide

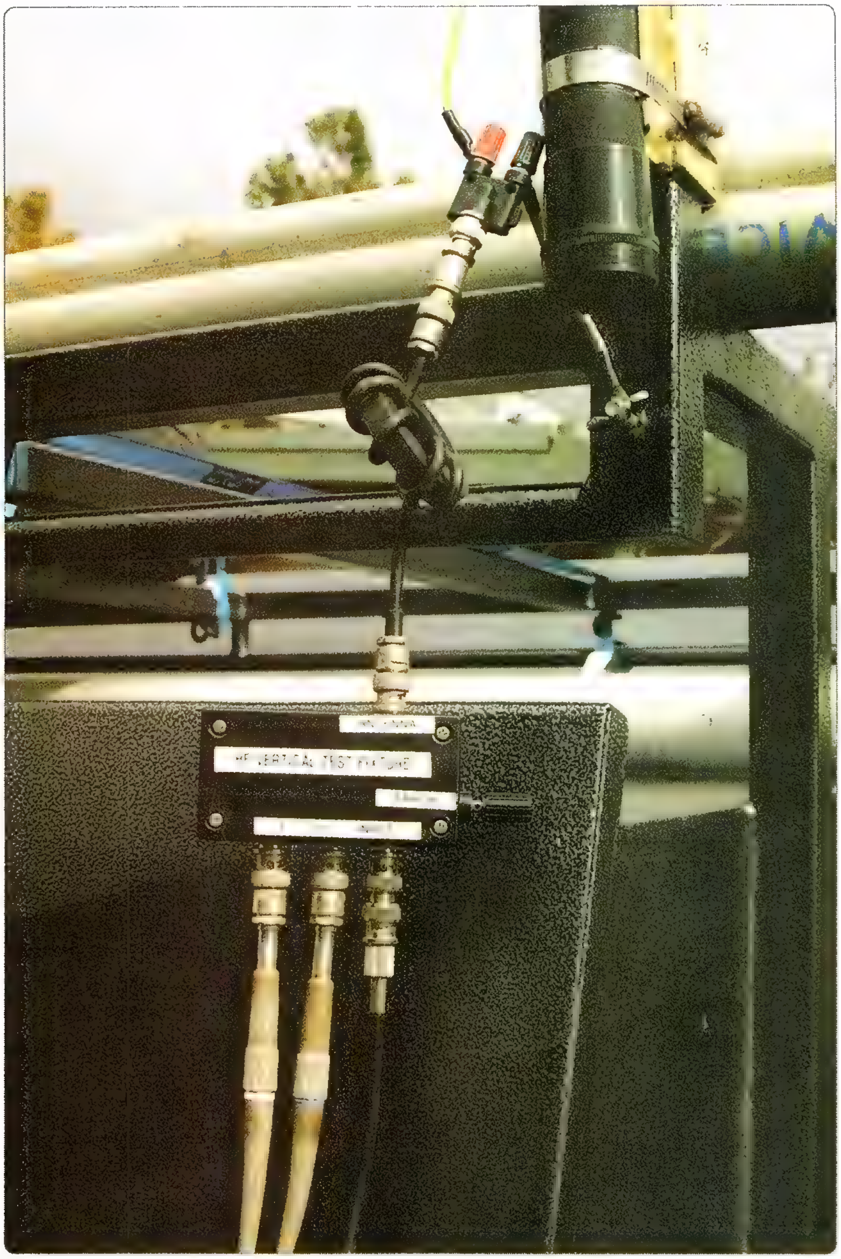

Photo 2: The antenna test fixture at the base of the antenna. The three leads entering the test fixture are the coax feedline from the signal generator (right) and the two test probes from the Vector Voltmeter. Note the decoupling choke between the test fixture and the antenna base, necessary to isolate the test equipment 'earth' from the trailer 'earth'.

adequate performance and do not require excessive space or effort to deploy, and which constitute a manageable hazard to other people. These are compromise situations – a permanent installation should use a better ground system.

This article concentrates on systems for 80 metres because, with the exception of 160 metres, 80 metres presents the most difficult challenges to achieving reasonably efficient antenna operation with antennas suitable for portable operation.

Grounding Systems

Much work has been done on grounding systems for vertical antennas on the HF bands.

The ARRL Antenna Book recommends 'optimal' ground systems – starting with 16 x 0.1 wavelength radials and going from there.

Jerry Sevick W2FMI has provided comprehensive information on requirements for ground systems, and has also demonstrated that it is possible to construct very short yet high efficiency antennas for the lower HF bands. Rudy Severns N6LF has also done considerable work, both experimental and by modelling.

However Sevick looked at antennas with upwards of four radials – up to over 100. Severns has extended the work by Sevick, also with an emphasis on high performance. However large numbers of radials are totally impracticable for portable operation. So how many radials are really needed to achieve acceptable, as distinct from the best possible, performance? At what point do diminishing returns set in, where the additional effort does not justify the benefit? And how long do the radials need to be?

Ground rods

Driven ground rods are sometimes suggested for providing an earth for a vertical or 'long wire' antenna. (Most 'long wire' antennas are long in name only – they are short in terms of wavelength and so do not behave as a true long wire).

Ground rods are not easy to install – driving a standard 1.2 metre rod into the ground is not easy, let alone a 1.8 metre rod. They can also be very difficult to recover.

However their biggest problem is that they are ineffective, unless you happen to drive one into a salt marsh. The earth resistance obtainable with a 12 mm rod driven one metre into clay is around 40 Ω, estimated using the method in AS/NZS 1768. Driven into sand or gravel, it can be much more. When combined with a short vertical antenna with a radiation resistance of a few ohms or less, poor efficiency is the inevitable result.

It is well known that driven earth rods are used for earthing of power supply systems. However these do not rely on a single earth – the distribution system used in Australia is ‘multiple earth neutral’ or MEN, and relies on multiple earths to work properly.

Mobile antennas and portable verticals

Another aspect of emcom or portable operation is that it will often be from a vehicle using either a mobile antenna or some other form of short vertical - short in this context meaning considerably less than a ¼ wave radiator.

Not only is the antenna short compared to the wavelength of operation – the vehicle (or other object) against which the antenna is ‘worked’ is also small. In this situation the system really behaves as an asymmetric dipole, one side of which (the vehicle) has significant coupling to ground.

At 80 metres, a vehicle body can be considered to be one plate of a capacitor with the other being the ground. The antenna has capacitive coupling to the vehicle body and to the ground around it. The currents induced in the ground by this coupling must return to the antenna feedpoint via the ground and the coupling between ground and vehicle body. The ground is lossy and hence absorbs some of the power fed into the antenna.

As described in the ARRL Antenna Book, significant radial currents flow in the ground around a vertical antenna, due to the electric field from the antenna. One function of an extensive radial system is to provide a low resistance, and hence low loss, path for these currents. But what happens when there is no radial mat, and there is no direct connection to ground?

Under this circumstance, the radial currents flow through the ground, near the surface. Because the ground is resistive (lossy), significant losses are created in the antenna circuit by the ground resistance.

This issue is made worse with a short antenna – because the fields in the vicinity of the antenna are necessarily more intense to radiate the same power as a full-size antenna. Therefore we can expect ground losses to be higher too, for a short antenna near ground. This immediately suggests that elevating the antenna is beneficial – that ground losses will reduce as the antenna is raised. And so they do – the ARRL Antenna Book notes that ground loss increases from around 2.5 Ω to six Ω as the antenna was moved from roof level to bumper level on a vehicle. We shall return to these loss values later.

Material for radials

Sevick notes that almost anything is better for a radial than nothing – even galvanised steel wire is much less lossy than the ground.

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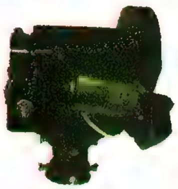

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However for portable use, other considerations come into play. 'Springy' wire must be avoided – loops of wire on the ground are an obvious trip hazard. The wire needs to be easy to handle, reasonably robust, and both 'soft' enough and heavy enough to lay down nicely along the ground.

I used relatively heavy wire, 50/0.25 mm, which is commonly available from Altronics, Jaycar, or elsewhere, and I recommend its use. I definitely do not recommend the use of ordinary 'earth' wire as used in building wiring.

Antenna losses and efficiency

The ground loss can be considered as a resistance in series with the antenna. The usual model for a short vertical antenna has three main resistances which absorb power – the antenna radiation resistance, the antenna series resistance, and the ground losses.

The radiation resistance is the resistance which would absorb the same amount of power as the antenna loses through radiation, when the antenna is fed with a known current. The radiation resistance can be less than one ohm for a typical 80 metre mobile whip.

The series resistance is the losses in the antenna itself. This mainly consists of resistive losses in the loading coil and may also include other losses such as eddy current loss in metalwork near the coil. These losses are extensively covered in the ARRL Antenna Book.

With an otherwise efficient antenna, the ground losses dominate the losses and are the main factor in achieving reasonable antenna efficiency. As noted above, the ARRL quotes values of from 2.5 to six Ω. However measurements in this article suggest much higher values.

So, the challenge is to reduce ground losses so far as practicable with a ground system which is practicable to deploy and is friendly to other people. For a given vertical antenna with all else held constant, reducing ground losses should result in a lower measured feedpoint impedance of the antenna, indicating likely higher efficiency.

The test antenna and test equipment

The antenna used for this investigation was a seven metre 'squid pole' antenna. This is a typical antenna which might be used for portable HF operation.

It has a lower section of approximately five metres designed to operate as a ¼ wave vertical on 20 metres, a loading coil to bring it to resonance within the 80 metre band, and a top section with a small amount of capacitive loading, achieved with a section of aluminium rod. It has a calculated radiation resistance of about six Ω.

It is mounted on the ladder rack of a 'tradesman' type trailer which is used for portable operation - refer Photo 1.

For determination of losses, the input impedance of the antenna at resonance was required. This involved measuring the current into the antenna with a known voltage input. Resonance was determined by the feed voltage and current being in phase, that is, pure resistance with no reactive component.

Voltage and current were measured with a broadband test fixture – refer Photo 2 - which sampled the current and voltage at the base of the antenna. The actual measurements were done with a Hewlett Packard 8405A Vector Voltmeter (VVM), a most useful piece of equipment. The antenna was fed from a Wavetek 3001 synthesised signal generator. The test equipment used is in Photo 3.

The test procedure for each test was as follows:

- adjust signal generator to approximately +10 dBm output.
- adjust signal generator frequency for zero phase angle difference between current and voltage, to place the antenna in resonance. Phase angle was measured with the VVM.
- adjust the voltage at the antenna base (as measured through the 20 dB coupling in the test fixture) for exactly -10 dBm on channel A of the VVM.
- read the current at the base of the antenna with channel B of the VVM. Due to the design of the test fixture, with a 50 Ω load the current reading was also -10 dBm on the VVM.

Photo 3: Test equipment used for the investigation. A Wavetek 3001 signal generator and Hewlett Packard 8405A vector voltmeter. A reference load is in front of the VVM.

Test No	Test configuration	Resonant frequency (kHz)	Impedance (Ω)
1	Trailer only (2.1 m x 1.5 m hi-top builders trailer) (base case)	3687	43
2	Single ¼ wave elevated radial	3658	74
3	2 x ¼ wave elevated radial	3633	57
4	3 x ¼ wave elevated radial	3621	35
5	Single ¼ wave radial on ground	3698	56
6	2 x ¼ wave radial on ground	3693	66
7	3 x ¼ wave radial on ground	3674	68
8	Single ⅛ wave radial on ground	3638	44
9	2 x ⅛ wave radial on ground	3630	31
10	3 x ⅛ wave radial on ground	3627	28
11	4 x ⅛ wave radial on ground	3625	25
12	6 x ⅛ wave radial on ground	3624	22
13	4 x ⅛ wave radials doubled back to same point	3639	28
14	4 x ⅛ wave radials doubled back, spread approx. one m	3636	27
16	2 x 10 m x 350 mm strips of wire mesh on ground	3608	31

Table 1: Calculated apparent base impedance of the antenna and measured resonant frequency of the various configurations.

Prior to the test series, the VVM phase reference was adjusted to zero degrees into a known good 50 Ω resistive termination. The test fixture was also checked over a wide range of frequencies to ensure that it did not introduce significant errors.

Test results

Tests were undertaken over a period of a couple of weeks as time, equipment and weather allowed.

Test results are shown, with the configuration tested and the calculated apparent base impedance of the antenna, derived from the voltage and current measurements. Also included is the measured resonant frequency of the antenna.

Most results are the average of multiple tests on different days. In each individual test the resonant frequency was mostly within five Hz and the measured impedance within about one Ω. This gives a high degree of confidence in the repeatability of the results.

Analysis of test results

A number of observations may be made from the test results:

1. In every case, adding a ground system significantly reduced the resonant frequency of the antenna. With the model outlined in the text (of the vehicle acting as a capacitor to ground), this is to be expected; the radials shunt this capacitance (which is part of the resonant antenna system) therefore the frequency should reduce.
2. The elevated ¼ wave radials are not very effective in reducing the ground losses, with three needed to reduce the antenna impedance at all. Using one or two ¼ wave elevated radials actually makes things worse. They are also decidedly inconvenient for portable operation – because of their length, because they need to have supports at the far end, and the absolute need to have them well above head height for safety.
3. On-ground ¼ wave radials do not perform well either. The increase in both antenna base impedance and resonant frequency with one or two on-ground radials is noteworthy. Sevick notes anomalous results with sparse ¼ wave radials too – he believes that resonance effects affect operation. Long radials also create a high degree of trip hazard. Severns also notes that a few long radials can have much higher ground losses than shorter radials.
4. Adding a single ⅛ wave on-ground radial does not achieve much. This is believed to be associated with relatively high local current density in the ground immediately adjacent to the radial. This can be contrasted to the relatively large area, and hence low current density, offered by the underside of the trailer.
5. With 6 x ⅛ wave radials, the feedpoint impedance drops to about 50% of the original value. This reflects reduction in losses and hence improvement in antenna efficiency.
6. There is very little difference between 4 x ⅛ wavelength radials fully extended, and 4 x ⅛ wavelength radials looped back on themselves (connected both ends) in a loop about one metre wide. This configuration is even more convenient for portable purposes.
7. There is some, but not much, improvement going from 4 to 6 x ⅛ wave radials. It appears that diminishing returns have set in, at least with the ground over which the tests were done.
8. Although the mesh panels would be expected to improve coupling to ground, the measured feedpoint impedance did not show this. However the resonant frequency did drop more than for any other test suggesting the mesh had significant capacitance to the antenna.
9. For portable operation, using 4 x ⅛ wave on-ground radials seems to be a reasonable compromise. Six radials is also a reasonable compromise, and are likely to perform better over poorer soils than the soil used for testing (damp clay).
10. The antenna efficiency achieved with this configuration of radials, based on a feedpoint impedance of 25 Ω and an antenna radiation resistance of six Ω, is a about 25%. This compares to an

efficiency of about 14% for the trailer alone with no ground system, a gain of nearly half an 'S' point. This is still about an 'S' point below a full size antenna.

11. There seem to be two effects with adding radials. The first, which this series of tests largely covers, is improving the coupling of the 'earthy' side of the antenna to lossy ground. There appear to be significant losses in this process which can be significantly reduced with only a modest number of short radials. As the number of radials and length is increased as investigated by Sevick and Severns, it appears that the losses caused by the radial ground currents are progressively reduced. As this occurs, both sources note that far field field strength improves as does low angle radiation.

Radials or counterpoise?

In the discussion so far, I have been referring to the grounding system as 'radials'. This reflects its evolution (in this series of tests) from the system of radial wires commonly used with a HF vertical antenna.

However observation (11) above discusses improving the coupling to (lossy) ground as a separate process to using a system of radial wires to reduce losses caused by radial current flow near the surface of the ground. This describes the operation of a *counterpoise.*

LB Cebik W4RNL discusses the operation of a counterpoise at some length, especially the confusion which has evolved since the term was first used in the 1930s. Its traditional meaning is a 'radial or screen insulated from ground but close to it to serve as a capacitively coupled ground for monopoles'. Its intent was to reduce the losses which can occur when a vertical antenna is connected to poor earth.

Clearly, the small grounding systems investigated above do fit this definition of a counterpoise and the test results are consistent with their role of improving coupling to, and reducing the losses in, lossy ground.

Further discussion – value of ground loss resistance

The results for antenna feedpoint impedance have been compared with the work by Sevick and Severn. The results appear to be generally consistent. The results showing that the ⅛ wave radials were more effective than the ¼ wave radials are also consistent with their findings that short radials are necessary with a sparse radial system.

The biggest surprise is the value of ground resistance. This shows, for the trailer alone, a value of around 30 Ω or a bit more (allowing for antenna series loss).

This is broadly consistent with some measurements done with another antenna, a high efficiency 2.4 metre mobile antenna for 80 metres. With trailer alone, ground resistance was about 20 Ω; with car attached to the trailer (and hence improved coupling to ground) this halved to about 10 Ω.

These values are much higher than the values quoted in the ARRL Antenna Book. The reason for this anomaly is not known. The measured feedpoint impedances in Sevick's work with a very small number of radials are also consistent with a much higher value, as is the work by Severns.

Therefore further work on the ground loss resistance with short antennas as used for HF mobile operation would seem to be warranted. It may be that the estimated efficiencies in the ARRL Antenna Book for HF mobile antennas are on the optimistic side.

Conclusions

This article has investigated the use of short, sparse radial systems for vertical antennas on the 80 metre band, being a band commonly used for portable operation while also presenting some challenges associated with practicable antenna system size.

It is likely that similar conclusions may also be made for portable or emcom operation on the 40 metre band where similar issues also apply, albeit less extreme.

The article gives some guidance to the level of performance which can be expected from radial systems which are easy to deploy, occupy a reasonable amount of 'real estate' and for which the health and safety issues are reasonably manageable.

I hope that this will assist operators wishing to deploy vertical antennas for portable or emcom use to make informed choices about the grounding systems to be used.

Acknowledgements

Particular thanks to John Patterson VK3ATQ and Warren Stirling VK3XSW for suggestions and encouragement in the course of this investigation.

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Bird proofing the cable

John Drew VK5DJ

The old two metre horizontal Yagi was gradually working its way down the fibre glassed support pole at the top of the tower and no longer pointed in the same direction as the other antennas. Something had to be done!

Frequent pointed comments from Col VK5DK that it was just not good enough to see such a poor installation from a member of the South East Radio Group (SERG) were dismissed as jealousy but when my good neighbour commented that my top aerial looked a little strange I knew something just had to be done.

Col decided bribery was appropriate and so offered to build a DL6WU Yagi and another good friend Chris VK5MC offered to install it. The latter offer was critical as I have a great fear of climbing towers and have become the butt of tower climbing jokes at the SERG meetings – very hurtful of course.

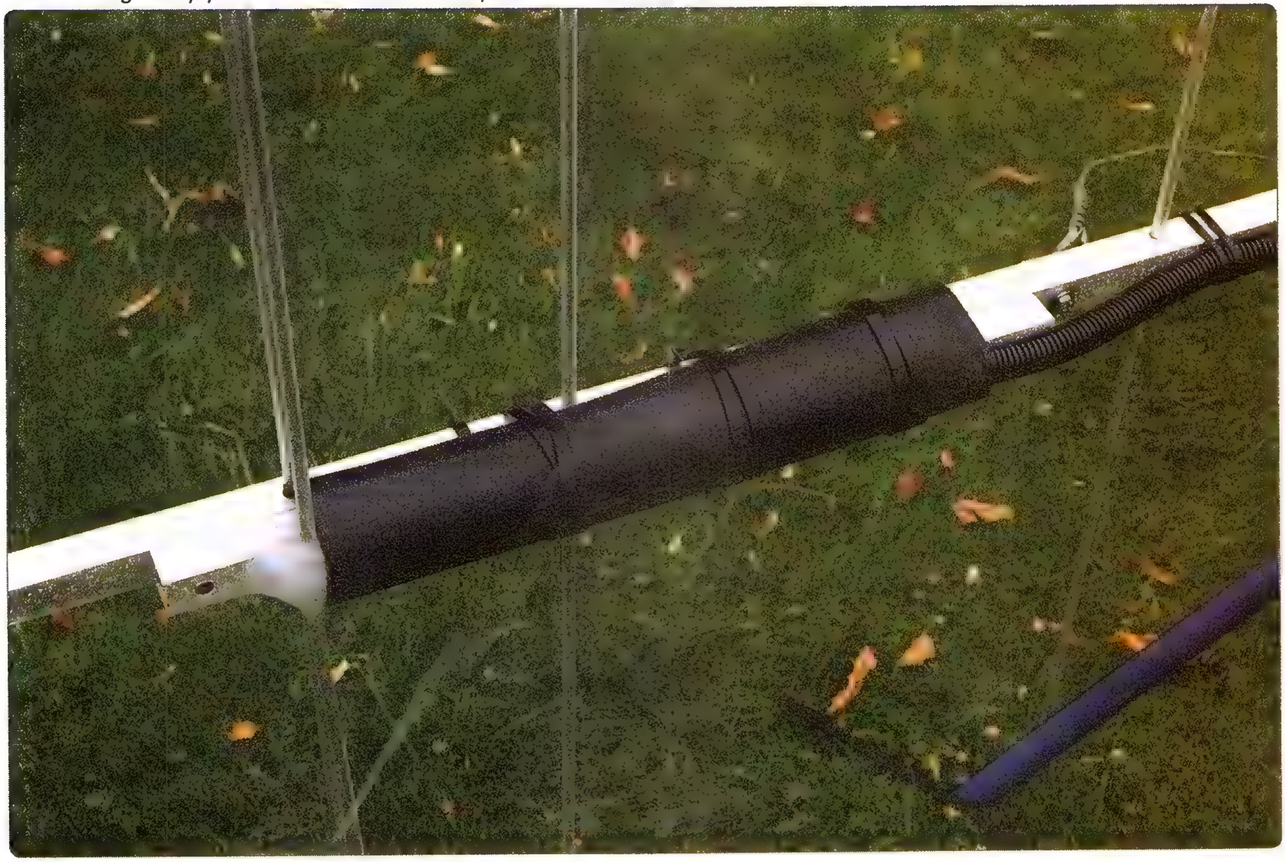
Col was good to his word and, in due course, a new 12 element, two metre Yagi appeared and after a suitable maturing period leaning against the shed and some preliminary work by Chris on the rotator, it was time for the installation.

Now those of you who live in the south east of our state will know that the Little Corella (Cacatua sanguinea) has a sharp, destructive beak which the bird uses to destroy coax, tape, baluns and things. They are in pest numbers, flocks of thousands are seen flying the district. At night they roost in the town's trees and make a huge racket, not to mention wrecking the new shoots. As you can see the author is not a fan of this particular bird.

Because I live in town, anything with double barrels is frowned upon. 'Yes, your Honour, I know they are protected, I was just shooing them away'! So other means had to be found to keep their beaks in check.

Some months back Col had noticed a team of people installing new coax cables on a phone site and had seen short lengths of bird protection tube. These offcuts are just what is needed to protect the

Photo 1: Irrigation pipe shield and flexible coax protection. More ties were added later.



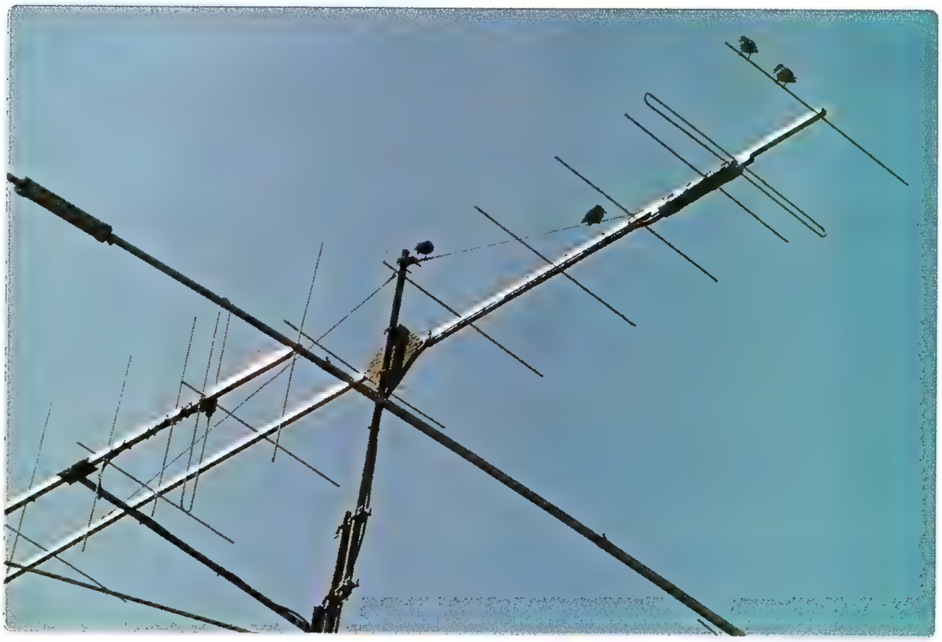


Photo 2: Starlings testing the new bird roost.

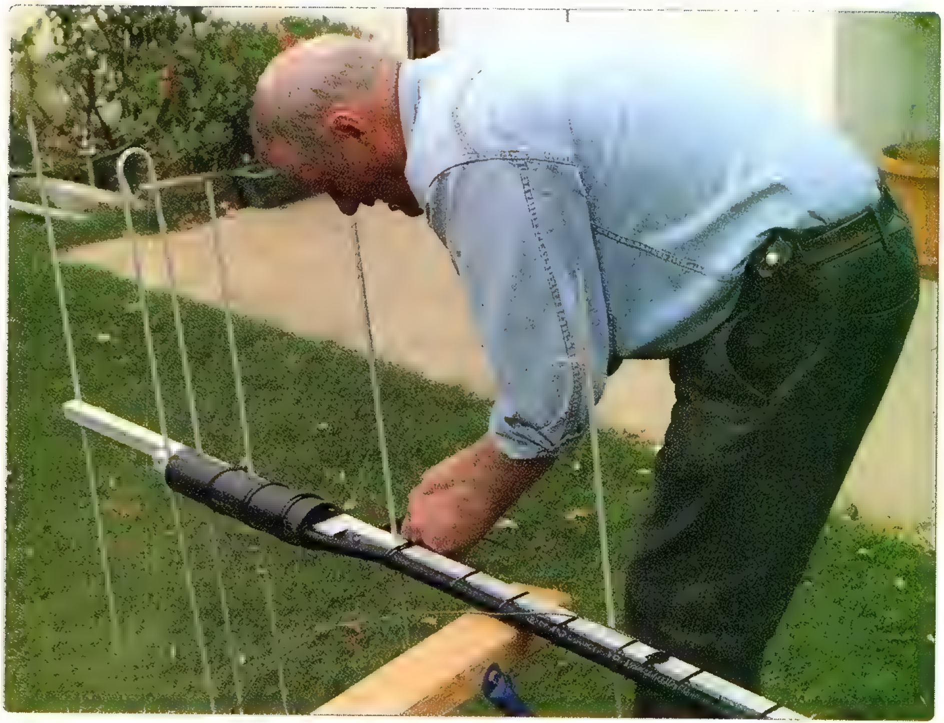


Photo 3: Chris VK5MC applies finishing touches.

coax and a polite request resulted in a gift of some short lengths. The material is corrugated, quite flexible and very hard. Col gave me a length of the tube and this was sufficient to cover the RG213 coax tail from the balun to a short distance down the support pole. That was the coax protected, but what about the balun?

This is where farmer Chris came to the rescue with a short length of 50 mm irrigation pipe. He split it with a sharp knife and encapsulated the entire balun area up to where it joins the folded dipole. Because the irrigation pipe is quite thick and reasonably flexible it makes an excellent shield. It is available from most hardware stores; I imagine that they wouldn't mind cutting a short length from a roll. Alternatively a request around farmer amateurs would track some down. Thick ties were used to keep the additions in place; these may prove to be the Achilles Heel - time will tell.

All articles should finish with a description of how wonderfully effective the project was. As it is only the next morning after the installation that report will have to wait a year or two, but I would have to say that the starlings that landed there today were absolutely stunned with the brilliance of the installation.

The photos show what was done.

Erratum

On page 8 of the July issue of *AR* magazine there is an error. The photo captioned as "Alan VK4SN and others checking out the VI103WIA station at the WA VHF Group shack" was actually taken in the NCRG Shack, during the Sundowner event. Your Editor apologises for the error.

InnovAntennas

Brian Morgan VK7RR/4

Late in 2010 I moved house from Tasmania to Queensland. After 33 years in the same house, the first step in the move was to dispose of all the antennas and equipment which had accumulated over that time. My most recent six metre beam, an 11 element wide spaced Yagi, did not survive its removal from 70+ feet up in the air, nor did its old insulators (more of this later).

Over a period of about 12 months, I then had the opportunity of thinking about what was going to replace the old six metre Yagi. It had served me well, with some very long distance extended ground wave contacts from Hobart to Victoria, plus most of the DX which other Hobartians worked. How I missed confirming a contact to Seattle is for another time.

I had previously purchased commercially made antennas for two metres and 70 cm from both the UK and the USA. In talking to other amateurs and in listening around on air, a new name appeared, just like DX coming out of the noise. **InnovAntennas**. The name itself attracted my attention, but the performance boasted by owners caused me to have a good Google look and to inquire further. At about the same time, an amateur at Ipswich, about 100 km from me, was on six metres with a colossal signal which he ascribed to his just completed Innovantenna.

I then started to communicate with Justin G0KSC, the designer and builder of these antennas. I should say at the outset that if every potential purchaser asks as many questions and raises as many queries as I did, Justin can't have much time for anything else. But he promptly and patiently answered my emails in a most informative way and made me very comfortable in purchasing from him. Whilst he offers three types of Yagi for six metres, the one that most appealed to me is known as an LFA or loop fed antenna. He also has a range of antennas in other bands from HF up to 70 cm. I am trying to persuade him to market antennas up to 23 cm.

Once the decision was made, payment was effected via credit card and an email was received saying the antenna was on the way. I found it hard to believe that within a week there was a nice cylindrical

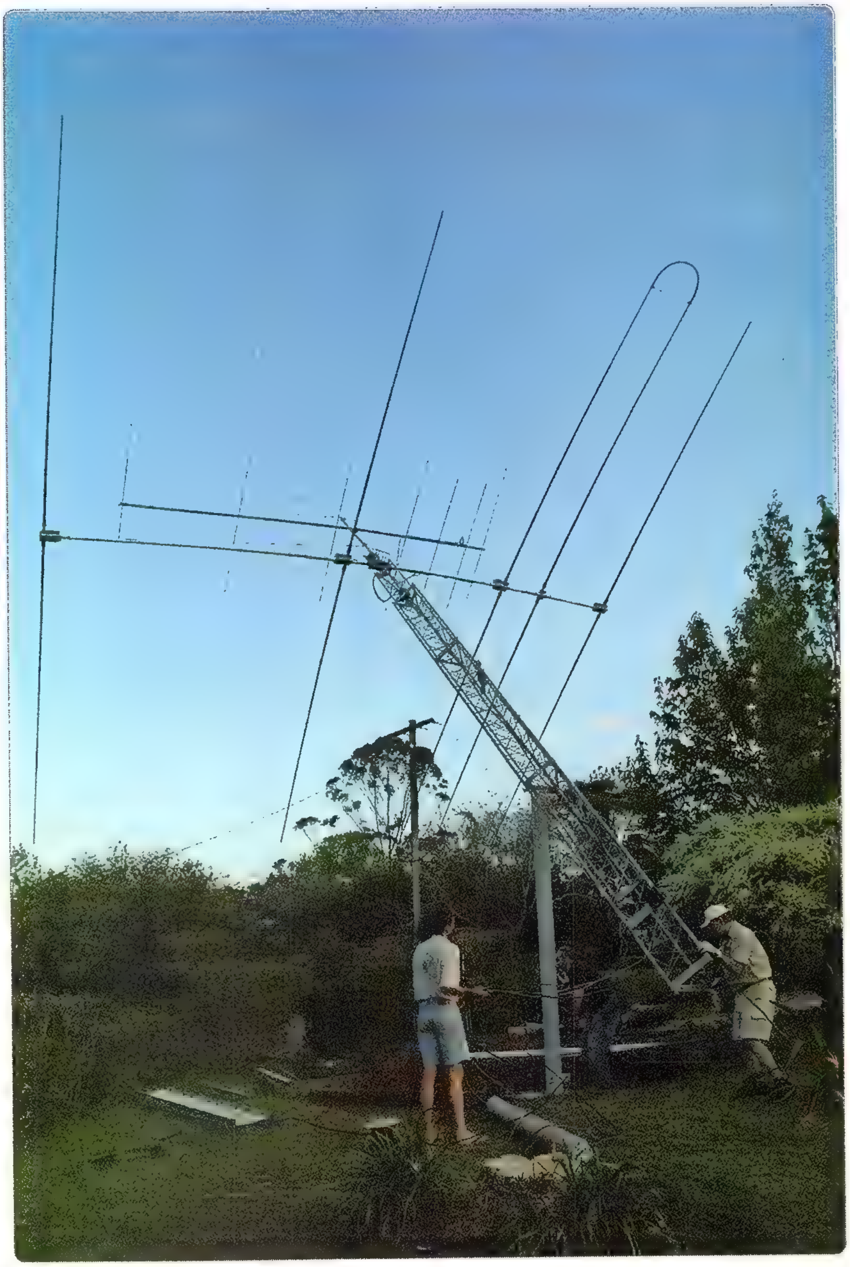


Photo 1: The completed InnovAntenna six metre Yagi.

box in my drive, just waiting to be unpacked and assembled. Given my past experience with importing antennas or equipment, mainly from the United States, this service was quite exceptional.

Then, of course, came the best part of all, assembling the antenna. This antenna has quite a different design to the driven element from those with which we are familiar. I would describe it as being a rectangular full wave driven element (not a folded dipole), laid flat on the boom, in the same plane as the parasitic elements. It has a quarter wave stub from the hot end of the driven element, attaching to the boom, thus providing for a DC earth for the driven element. Because it is a quarter wave, it acts as a pseudo bandpass filter at the operating frequency, reducing off frequency interference and wide band noise.

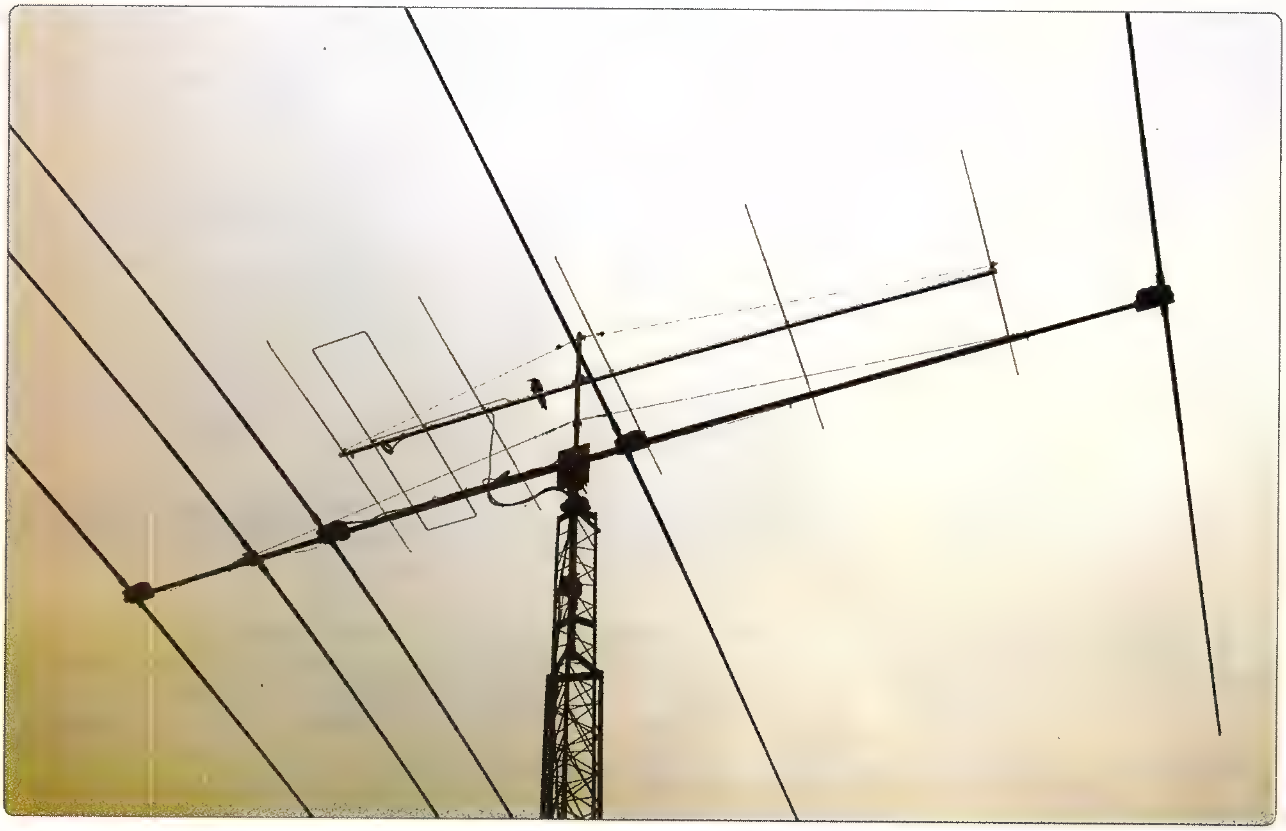
The antenna came complete with every component described in the parts list. I thought I was short two saddles for the stainless U bolts to attach it to the mast of the tower, but was assured by Justin that these weren't necessary on the smaller beams. Notwithstanding his optimism, having experienced Australian wind, I obtained two stainless saddles, just to be on the safe side. In my old installation, despite my best efforts, the six metre beam gradually moved a few degrees from the direction of the SteppIR underneath it, such that every few months a trip up the tower to realign them was necessary. For some reason, as the years got on, my tower seemed to get higher and the climb more difficult. So I erred on the side of caution and used saddles on the boom to mast and on the U bolt supporting the guys.

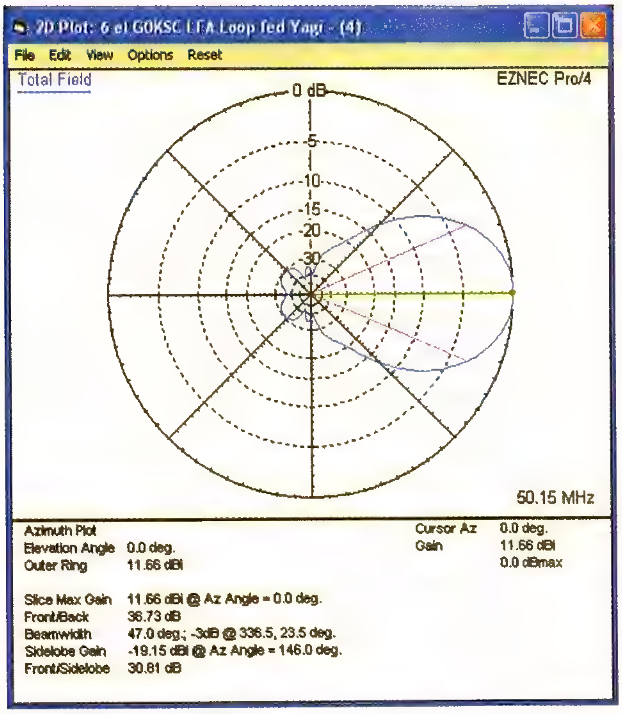
The instructions provided with the antenna are written in English. So as not to confuse you, that does not mean Jinglish. I found them readily understandable and did not have to read and re- read them in order to comprehend what I was being told. In fact, if the truth be known, I skimmed through them before starting the assembly, and only gave close attention to the assembly instructions for what was to me the novel driven element. Assembly requires the minimum of tools, and no drilling. Time taken for complete assembly was about three hours, which included a stop for lunch.

In Photo 1 you can see the completed antenna with its unique driven element with the tower in the process of being raised. The instructions recommend the use of a 1:1 balun as close to the feed point as possible. In my case this consisted of half a dozen turns of coax which I carefully wound so as they were right up against the feed point. Several robust cable ties hold it in position against the boom.

Little if any adjustment of the driven element is necessary. When I first set up the antenna on a six metre length of pipe, the VSWR at 50.110 MHz was 1.3:1.

Photo 2: The InnovAntenna six metre Yagi in place on the tower. The 'feathered friend' was a visitor.




2D Plot: 6 el G0KSC LFA Loop fed Yagi - (4)
File Edit View Options Reset
Total Field
EZNEC Pro/4
0 dB
-5
-10
-15
-20
-30
50.15 MHz

```
Azimuth Plot                                          Cursor Az    0.0 deg.
Elevation Angle   0.0 deg.                            Gain         11.66 dBi
Outer Ring        11.66 dBi                                        0.0 dBmax

Slice Max Gain    11.66 dBi @ Az Angle = 0.0 deg.
Front/Back        36.73 dB
Beamwidth         47.0 deg.; -3dB @ 336.5, 23.5 deg.
Sidelobe Gain     -19.15 dBi @ Az Angle = 146.0 deg.
Front/Sidelobe    30.81 dB
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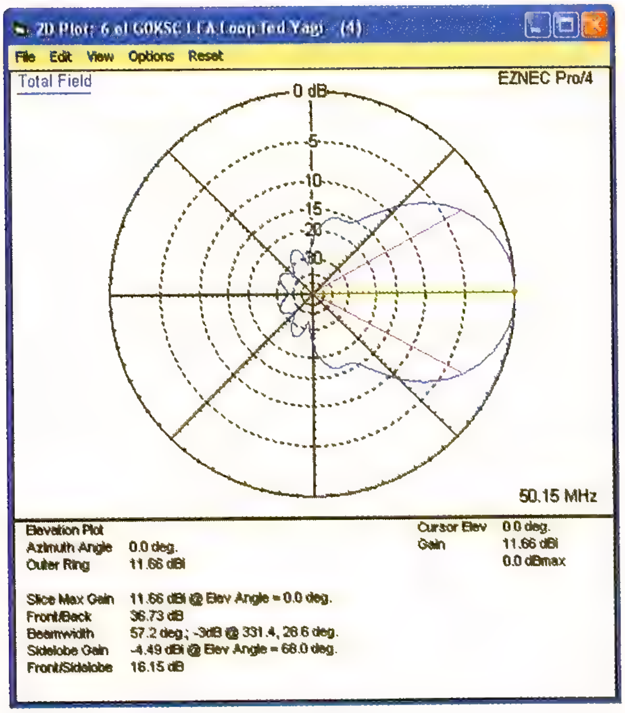
Figure 1: Azimuth Plot.


2D Plot: 6 el G0KSC LFA Loop fed Yagi - (4)
File Edit View Options Reset
Total Field
EZNEC Pro/4
0 dB
-5
-10
-15
-20
-30
50.15 MHz

```
Elevation Plot                                        Cursor Elev  0.0 deg.
Azimuth Angle     0.0 deg.                            Gain         11.66 dBi
Outer Ring        11.66 dBi                                        0.0 dBmax

Slice Max Gain    11.66 dBi @ Elev Angle = 0.0 deg.
Front/Back        36.73 dB
Beamwidth         57.2 deg.; -3dB @ 331.4, 28.6 deg.
Sidelobe Gain     -4.49 dBi @ Elev Angle = 68.0 deg.
Front/Sidelobe    16.15 dB
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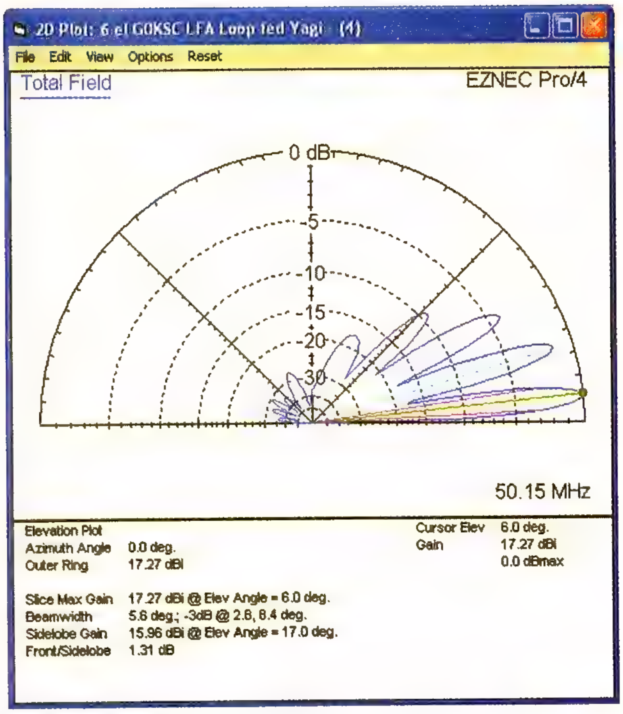
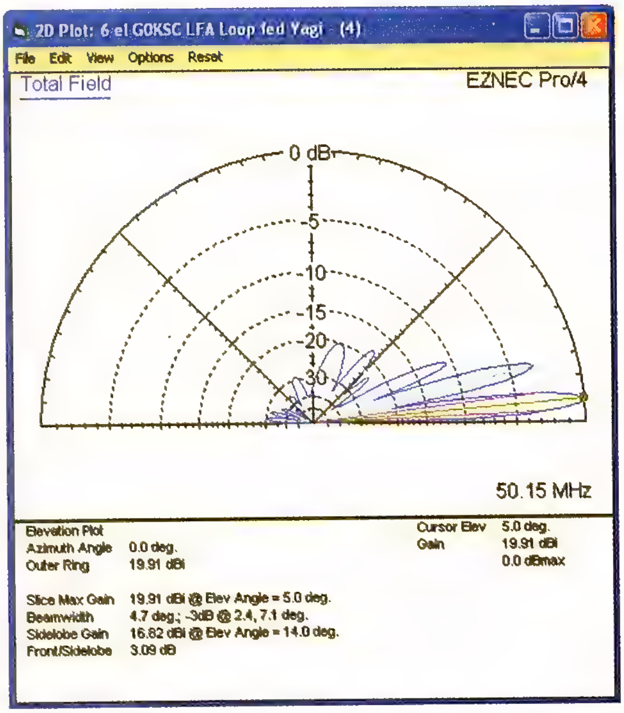
Figure 2: Elevation Plot.


2D Plot: 6 el G0KSC LFA Loop fed Yagi - (4)
File Edit View Options Reset
Total Field
EZNEC Pro/4
0 dB
-5
-10
-15
-20
-30
50.15 MHz

```
Elevation Plot                                        Cursor Elev  6.0 deg.
Azimuth Angle     0.0 deg.                            Gain         17.27 dBi
Outer Ring        17.27 dBi                                        0.0 dBmax

Slice Max Gain    17.27 dBi @ Elev Angle = 6.0 deg.
Beamwidth         5.6 deg.; -3dB @ 2.8, 8.4 deg.
Sidelobe Gain     15.96 dBi @ Elev Angle = 17.0 deg.
Front/Sidelobe    1.31 dB
```

Figure 3: Single LFA 15 metres above ground.


2D Plot: 6 el G0KSC LFA Loop fed Yagi - (4)
File Edit View Options Reset
Total Field
EZNEC Pro/4
0 dB
-5
-10
-15
-20
-30
50.15 MHz

```
Elevation Plot                                        Cursor Elev  5.0 deg.
Azimuth Angle     0.0 deg.                            Gain         19.91 dBi
Outer Ring        19.91 dBi                                        0.0 dBmax

Slice Max Gain    19.91 dBi @ Elev Angle = 5.0 deg.
Beamwidth         4.7 deg.; -3dB @ 2.4, 7.1 deg.
Sidelobe Gain     16.82 dBi @ Elev Angle = 14.0 deg.
Front/Sidelobe    3.09 dB
```

Figure 4: 2 x 6 element LFA's 5 metres apart, bottom antenna 15 m high.

I was confident that the dimensions of the driven element were exactly as prescribed. It is actually quite easy to make adjustments as the driven element consists of four sections which can be concertinaed in and out, thus enabling the dimensions to be set critically. It was at this time that I realised that my balun could be brought several centimetres closer to the feed point, by a little fine tuning. The feed point requires soldered lugs to connect direct from the coax to screws at the mounting point. With a little finesse the balun can be placed very close to the screws and the coax ends made into a Y can be cut so as to reduce the length of the ends of the coax to the minimum necessary. When I took a few minutes to neaten these connections, I found the VSWR was down to 1:1 as measured on my Bird Wattmeter.

Justin justifies leads instead of a connector in his instructions and I tend to agree that, provided one takes care, this system works well and is very easy to seal against the weather. Furthermore, I have had baluns disintegrate over time, due to UV exposure and/or the amount of RF they were subjected to. With this method of feeding the antenna, provided good quality coaxial cable is used, one should have no worries in running the legal power limit.

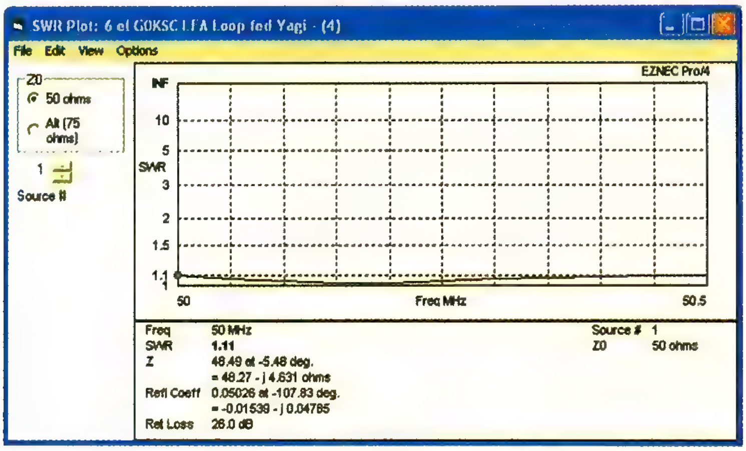
The antenna was mounted above my four element SteppIR at the top of a Nally tilt over wind up tower. Even the 6.4 metre boom antenna is provided with phyllistran guys so as to prevent sag. In my case, I placed them as high up the mast as possible, then moved the beam down to tighten the guys, at the same time using the supplied turnbuckles to assist with fine tuning of each half on the boom.

The antenna is fed with a few metres of flexible coaxial cable in a loop to LDF 4-50 heliax. From past experience I have used the flexible coax because my rotator turns beyond 360 degrees, such that if one was not careful, the join would be strained by this movement.

Photo 2 shows the Innovantenna in place above the SteppIR. The coaxes are intentionally in a loop so as to provide enough cable to turn either side of the 360° point.

The SteppIR has active, that is, tunable elements for six metres. I did notice that the tuning of the Innovantenna was being adversely affected by this, so now, when I am using six metres, I ensure that the elements of the SteppIR are in the parked position.

The antenna has been in the air now for about six months, long enough for me to be able to make some observations about it.


SWR Plot: 6 el G0KSC LFA Loop fed Yagi - (4)

Z0
● 50 ohms
○ Alt (75 ohms)

1
Source #

Freq 50 MHz
SWR 1.11
Z 48.49 at -5.48 deg.
= 48.27 - j 4.631 ohms
Refl Coeff 0.05026 at -107.83 deg.
= -0.01539 - j 0.04785
Ret Loss 26.0 dB

Source # 1
Z0 50 ohms

Figure 5: Forecast and realised Standing Wave Ratio.

The first thing I noticed when checking with a station about 100 km away was that the antenna appeared to have a lot sharper beamwidth than my old 11 element. As Professor Julius Sumner Miller would have asked, 'Why is it so?', the very question I asked of the inventor, Justin. He reminded me that the design of the driven element is such that the side lobe is significantly reduced, making the antenna appear to be much sharper than a conventional beam, even one on a longer boom. I can assure you that the beamwidth is noticeably sharp. This is not to say that you hear nothing off the side, but it is well down in strength. Front to rear ratio is also noticeably better than any six metre antenna I have previously had, but I have not measured it scientifically.

The reason for the lack of forward side lobes (and the high side suppression) arises from the design and concept of the loop. The smaller straight edges are 180 degrees out of phase so radiation from these sides is cancelled out in the same way that balanced line feed will not radiate. In turn this aids the computer optimisation process as the software can use this benefiting aspect to ensure higher levels of F/R (front to rear) without too much detriment to forward gain or bandwidth.

Last week I heard local stations calling an amateur in China. At the time my beam was facing south. A quick check in my logging program gave me the beam heading and a few seconds later, the beam was headed to China. The signal came up from about strength 3 to 7. I responded to the CQ call, and worked him at the first attempt. I was running less than 50 watts at the time.

I have worked most JA prefectures in the past month. It was here that I first came to realise that unlike my home made beam, turning the beam even 10 degrees makes quite a difference.

Now a comment on the build strength of the Innovantenna: I live at Maleny, north of Brisbane, and over 600 metres above sea level. Our house is built in a position which minimises its exposure to the wind, but the same cannot be said for the tower and the beam. We have had some very strong winds, with gusts over 80 kph measured at ground level. The two antennas remain precisely parallel to each other and are none the worse for the wind which is considerably higher 18 metres off the ground.

I have also been surprised at the bandwidth of the antenna. I am only interested in operating on the lower part of the band, but on my tests it shows a flat VSWR of 1:1 between the band edge and 50.4 MHz. From there, a very small increase in reflected power has been observed on the Bird, up to 50.5 where I have noticed that the VSWR does taper off. That result is better than I have ever obtained in the past. I should also add that I have made no adjustments at all to the dimensions, from when it was first being assembled. The antenna was assembled precisely in accordance with the instruction manual.

Because we are in what is colloquially known as 'lightning alley' (600 metres from us are two hills with lots of television and communications towers, which are regularly hit) I have the tower grounded to a copper stake set over a metre into the ground. Attempts to bury it deeper caused the stake to bend, due to the clay it was trying to penetrate.

Where each run of coax enters the house the outer is earthed plus run through a lightning arrester. Each coax length is earthed to the same point at the tower as the tower earth.

Am I happy with this antenna? I am delighted with it. After many years of home-made six metre antennas, with insulators which became brittle after a few months, or with through the beam elements, or booms which after a while began to look like bananas, this antenna has completely met my most optimistic expectations. Its design is very simple, but strong. The insulators give the appearance of being common old garden variety electric fence type, but closer investigation will show that they are high quality hydraulic hose clamps made in Germany. They are physically very strong and have high UV protection. Thus, I don't see them needing replacement short of a catastrophic incident.

It is worth noting that the insulators are made of polypropylene, not polycarbonate. If you have ever used polycarbonate you would have found that, after a few years, it seems to lose its insulating characteristics at VHF and above. As someone once said, 'try using polycarbonate in the microwave and see what happens'.

When I bought my beam I had in mind to stack a second one, in time to come. That time will arrive sometime next year when Justin will be able to supply me with a second identical antenna, plus a power divider etc, so that I can annoy my fellow amateurs with even more radiated power.

At a social function at our Club recently, an amateur for whom I have the highest regard told me that my signal on six metres was the strongest he has ever heard. He lives about 20 km from me as the crow flies.

Do I recommend the Innovantennas? If my experience is anything to go by, I think that the Americans now have a lot of catching up to do, with their design, their punctuality in replying and also with their reliability in responding to queries. In December of last year I had arranged for an American antenna to be sent out as a relative was relocating to Queensland. All I had to do was give him a week's warning of when the container was to be loaded and the antenna would be delivered. When I called to give him the warning, that manufacturer was unable to supply as he had sold my antenna to someone else, he said. That order was cancelled.

Justin is doing a remarkable job and the results are demonstrated in the service he offers to his customers. With the Australian dollar reflecting well against the pound, this is a very good time to buy from the United Kingdom. I have to praise the speed of delivery for, as mentioned, the kit arrived in less than one week and with no fuss or bother.

Do I have any criticisms? I mentioned earlier that the kit does not contain saddles for the stainless U bolts. In my humble opinion, one would be wise to use them, as the risk of sideways slip on the mast is too great otherwise. I would like to see a few spare plastic end caps as I clumsily dropped two of mine onto the lawn and had to improvise to replace them.

The antenna is very easy to assemble, it is robust and it performs well. In summary therefore, I am full of praise for it, as well as for the Company behind it, with its excellent pre and after sales service.

The EZNEC charts reproduced in this article, Figures 1 through 5 below, have been published with the consent of Innovantennas. For further reading, I suggest you check out Justin's web site, namely, *http://www.innovantennas.com/*

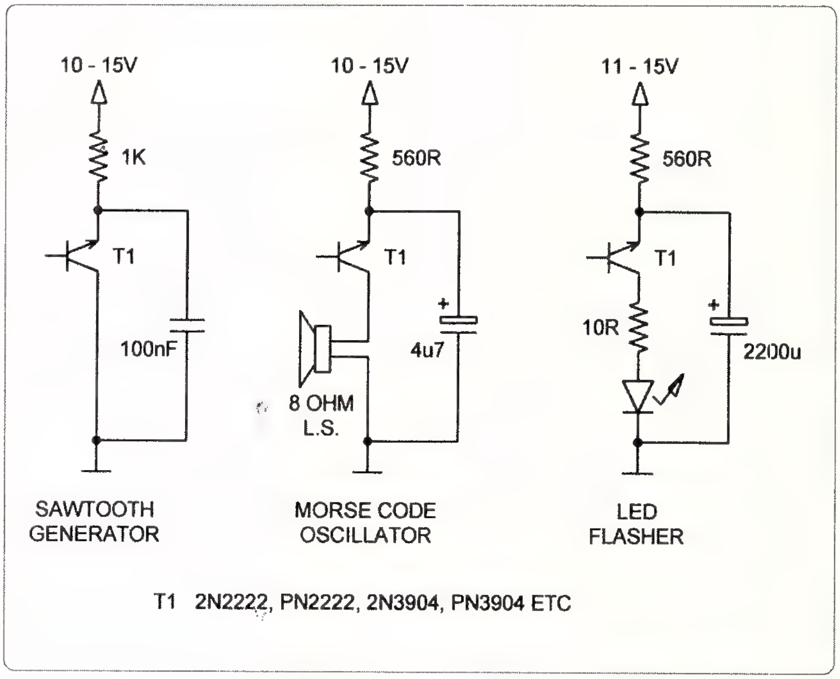
I have not had an opportunity of using Justin's antennas for other bands, but if you are passing Maleny in about six months' time, don't be surprised to find a pair of stacked six element, six metre Innovantennas.

Participate

Remembrance Day Contest	**17/18 August**
International Lighthouse Lightship Weekend	**17/18 August**
33rd ALARA Contest	**25/26 August**

A very strange circuit

Jim Tregellas VK5JST



A very strange circuit – actually three very strange circuits!

Here is a series of circuits for all of you who think you know something about semiconductors.

How do they work? I have no real idea. All I do know is that some transistors exhibit the characteristics required to make these circuits oscillate and some don't. If you want a proper explanation, see your nearest professional semiconductor theorist. A clue for you is that the mechanism involved has something to do with the avalanche breakdown voltage of the base emitter junction of the transistor, with most moderately doped junction transistors having a figure for this parameter of around 8.5-9.5 volts. (A base emitter junction used this way makes a brilliant zener diode with a very sharp knee, and because of the physical geometry of a typical transistor, can dissipate about 30% of the rated collector dissipation due to the ratio of junction areas involved).

Anyway, have a play with the idea and see what the various transistors in your collection will do. The saw tooth generator shown generates a saw tooth with a badly curved exponential rise, and can be massively improved by replacing the 1 kΩ resistor with a constant current source. The simplest form for this is probably a Process 50 FET (2N3819, 2N5485, MPF102 or similar) with its gate and source shorted together. If you like to put a 10 Ω resistor from collector to ground you can sample the voltage resulting from the very high capacitor discharge current. This brief spike has a bucket load of uses.

The Morse code oscillator just needs a key added in the supply line and away it goes. It will probably make a great project for a Scout/Guide group. The key can be made up in a variety of ways, with paper clips, and drawing pins/wooden clothes pegs immediately coming to mind. Adjust the volume with a resistance in series with the loudspeaker, and the frequency by increasing the value of the 560 Ω resistor, or changing the capacitor value.

Finally, the LED flasher has many applications, and Scout/Guide projects are there again... Vary the capacitor value or increase the 560R to change the flash rate.

Have fun.

MEMNET

The WIA has implemented a new Membership Management System called MEMNET.

MEMNET allows members to verify and edit their personal details and view membership notices.

If you are having difficulties registering for MEMNET, please contact *memnet@wia.org.au*

People in amateur radio: Greg Sargeant VK2EXA

Graeme Scott VK2KE

Greg became interested in amateur radio in 1983-4.

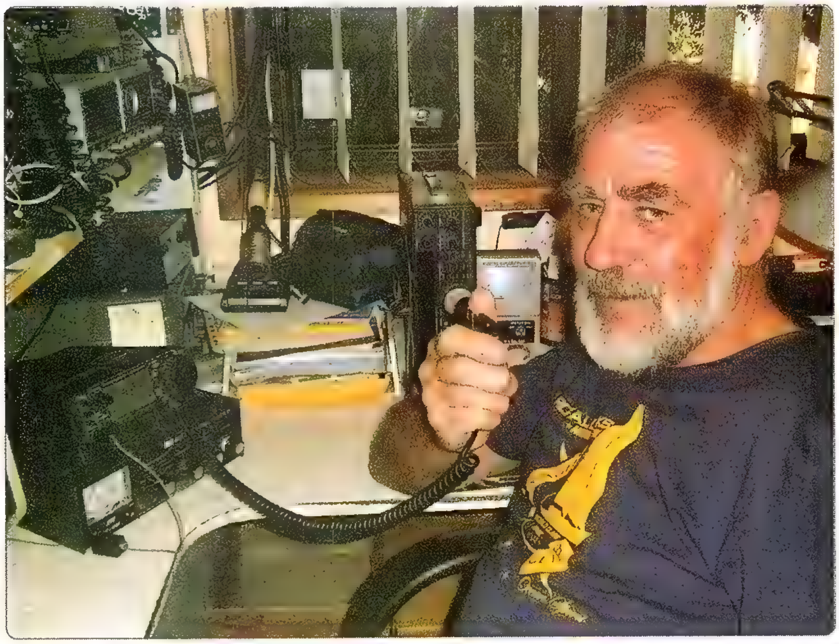
He was encouraged by Cleaver Duell VK2MUA (SK) and by John Field VK2DLA, a white cane operator. Greg was also encouraged by Don Haberecht VK2RS (SK), an amateur in the region who involved Greg in JOTA activities.

Late in 1984, Greg saw an advertisement in the local paper and applied to join a class at Wodonga Tech to be conducted by John Wilson VK3LM. The class was made up of Greg, some Army apprentices, Vic Hearn (now VK3CQP), plus Len Peters and Don Peters who live in the Tallangatta Valley. The class numbers were enough to launch the course, in February, 1984 and the rest is history as Greg obtained his Novice licence, with the callsign VK2MUE. He was asked by John if he wanted to go on to the 'full' callsign, as it was then known, and a number in the class joined in and so the course went on to cover the higher level theory and the faster Morse code.

When he passed his Novice licence in September 1984, Greg began operating mostly on the 80 m band. Greg achieved his full call status in May 1985 and took up the callsign VK2EXA.

Greg says that John asked the class what they wanted out of the course - some said they merely wanted the Novice licence while others wanted to be able to go on two metres. Greg and some others wanted to 'go for broke' and get the full callsign so they could access all privileges.

Greg says he used to go to 'Maccas' or KFC after work and turn up at the Tech and begin the class at 6 pm with John. John used to start with some reviews of the Regulations and then some Morse and then he would cover some theory and by 10 pm close the session each week.



A recent photo of Greg Sargeant VK2EXA in his shack.

Greg got some good advice and that was to get up one hour earlier every day and cover theory for one hour and then go off to work. He says it works.

To do his Morse (CW), he joined the Early Bird net at 0700 and went to 0730 with sending and receiving Morse.

Greg was involved in a range of activities on air as a licensed operator and one was to go on 80 metres and join the Bendigo *Premier Town* net hosted by amateurs in the Bendigo area (Bendigo was the then recipient of the Premier Town award). So Greg obtained the ***Premier Town Certificate*** which he proudly displays on the wall at his shack.

Greg has supported JOTA for many years since about the 1980s and is usually found at Camp Nelson on the Albury-Howlong road putting the kids on air for a whole weekend. One weekend in JOTA, a station was set up at a Scout hall in Albury near the Catholic school in Fallon St. using an ABQ beam. We worked a VK0 in Antarctica - 20 metre conditions were excellent and Greg, yours truly and the kids had a ball for over an hour speaking to the blokes down south at Casey base.

Another event in which Greg was involved was the Bicentennial Expo at Wodonga Showgrounds. We borrowed a trailer from John VK3XEJ. This trailer had a Nally tower bolted to it and TH3JR Yagi on 20, 15 and 10 metres. Many QSOs were held and we really put the town on the map for a number of days. 40 and 80 metre antennas were added to give more bands for use during the event.

The club display was highly successful and a huge number of visitors came to our displays.

A club event that Greg masterminded was the launch of the new PS Cumberoona paddle steamer in Albury. An award certificate was printed and stations working the club station received this certificate to commemorate the launch.

About 15 years ago, Greg was approached by Peter VK2CIM to provide radio communications for the ***Rooftop Run*** up near Mt Hotham. The outcome was that the radio club mounted a station on Mt Hotham.

In the 2012 Rooftop Run, Greg had set up a station on Mt Hotham and, when a huge storm blew in, he found his heavy Toyota 4WD was rocking violently for nearly four hours. This only added to the excitement of the event in no small way. The visibility dropped very dramatically to the point where Greg found that the VK3RHO antenna completely disappeared from view –and it was only 30 metres away! He was also worried greatly about the 14 element 2 metre Yagi that was on a mast that was being battered rather badly by the wind. Somehow it managed to survive! Greg said the sleet was something else. He really appreciated getting back down off the mountain eventually and back home to the comfort of his fire and the lounge chair in Albury.

Greg has organized the ***Murray River Challenge*** communications for some years at Corryong. This has entailed getting a number of operators established around the course to provide safety comms for the participants who have to do a bike ride on a high country farm property then a canoe paddle down the Murray River and finally a run down the roadside into Corryong to the finish line. Snakes were very active at some locations around the course which made it interesting for some operators.

The Quilty Horse event was run some years ago (1996) near Beechworth, Myrtleford and Stanley. It was a wet time of year with much rain and mud to be seen and we were stationed around the course to ensure the safety of all competitors. There were a few dramas with at least one horse falling down a mineshaft and so people were summoned to rescue the rider and his horse from this unexpected predicament.

Greg has some favourite activities and bands. He loves rag-chewing on 80 metres and has also been involved in the Fishers Ghost Club net for quite a number of years. This involved an on-air quiz hosted by Arthur VK2FFH which Greg says was a great deal of fun. Greg took part in this quiz net sometimes from his favourite portable location near Shelley, which is close to Corryong, in the pine plantations. The net closed some time ago (for about 10-12 years) and has recently been resurrected in 2012 by Greg and Kieran VK3BTV. The net is on 3580 kHz and is on Friday nights. There are 10 questions and the quizmaster has final say with 'no correspondence being entered into'. Greg says there are no PCs allowed and no internet at all – just brainpower.

Greg and his XYL Dallas love camping and have a very well equipped trailer with all mod cons. This means that the portable gear goes with them and many a QSO has been held well into the night – usually on 80 metres with 40 and 20 metres coming into play often in the daytime. One can hardly think of a more relaxing pursuit.

Through the radio club in Albury, Greg has been involved with the first Foundation licence classes and is a WIA assessor and has held that position since 2002.

Under Greg's direction, the radio club has held some 'antenna weekends' at Camp Nelson near Howlong. These have been for members to gain information and skills in relation to making antennas and especially for new members who need some help and advice when it comes to antenna construction.

Greg has long been active in WICEN (Vic) and as a result he has organized some events where we provide radio communications for the safety of participants in events such as the Alpine Car Rally.

Also he was instrumental in taking club members up near Mt Beauty to take part in a joint training exercise involving a simulated bus crash off the side of the road. This exercise involved police, ambulance, fire, SES and WICEN people. It proved to be a very good learning exercise for all involved.

There was a jet boat course near the Albury Racecourse some years ago and the Club, under Greg's Presidency, arranged for safety communications for the participants.

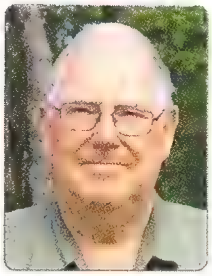
As a member of WICEN Vic, Greg has taken part in bushfire and flood communications.

The flood that took him away from home for a few days was the one that swept through Benalla and Shepparton. He says that that event was quite chaotic as vehicles that had high road clearance were the only ones allowed through. He spent some time on Army vehicles that had that high clearance.

During the 2003 fires he was stationed at Corryong to provide backup communications for the DSE and other agencies. He also spent some time at the DSE Centre at Ovens near Myrtleford.

Plan ahead

5 October Redcliffe and Districts Radio Club REDFEST 2013



VK2 news

Tim Mills VK2ZTM
e *vk2ztm@wia.org.au*

This month finds the Oxley Region ARC with their AGM on Saturday the 3rd. Summerland ARC with their annual SARCFEST on Sunday the 11th at the Richmond Hill club rooms. The Lighthouse and Lightship weekend and the RD Contest share the same time slot. Everyone is encouraged to be involved in these events.

The Blue Mountains ARC will commence a Foundation course on the second weekend of the even numbered months. The first will be on Saturday 10th August, candidates permitting. Check out their web site *www.bmarc.org* Westlakes ARC are also about to start a Foundation course on Saturday afternoons. Contact Geoff VK2GL at *league@optusnet.com.au* Oxley Region ARC will be concluding their Friday night Standard course this month. They are planning both Advanced and Foundation courses and request candidates to register now.

Next month, in September, Waverley ARS has a Foundation weekend planned for the 7th and 8th. On Sunday the 15th Westlakes have their annual field day.

Fisher's Ghost ARC conduct a weekly simplex net on 147.500 MHz and listen on the High Range repeater 146.825 MHz for those out of range on simplex.

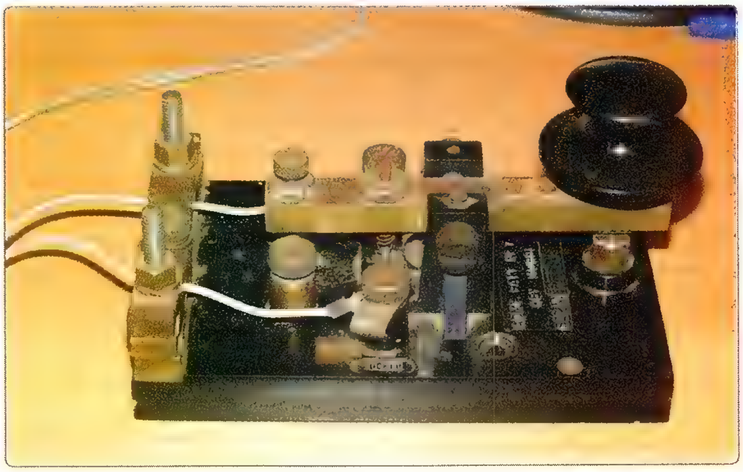
The Hornsby and District ARC recently commissioned a 70 cm repeater on a Chatswood high rise with a good view of western Sydney. The site is shared with WICEN systems. Check out VK2RHT on 438.350 with its 5.4 MHz offset, so transmit to it on 432.950 MHz. For FM it requires, and sends, a 91.5 Hz tone. For P25 the NAC is 293. There are plans to link it to VK2RNS on 147.250 in the future.

The next activities of ARNSW will be in September with a Foundation course on the weekend of the 21st and 22nd. Assessments on Sunday 22nd. The Trash and Treasure Sunday is the 29th. All conducted at the VK2WI site at 63 Quarry Road, Dural. Check out what major items are on offer on the ARNSW web site *www.arnsw.org.au* under Disposals.

73 – Tim VK2ZTM.

Royal Navy Key Type AP7681

Rodney Champness VK3UG - rodlynn6@bigpond.com



The Royal Navy Key Type AP7681.

This key belongs to an elderly ex-amateur radio operator who is unable to operate from his current address. He wants the key to be found a home in a museum that would value such an item. It is a very nicely balanced key and a joy to operate. What intrigues me is the sheer size of the key contacts which are 9 mm in diameter. This suggests that the key is quite old and with the Admiralty pattern device that it is was intended to be used to key spark transmitters. Alternatively the design was so fundamentally sound that this model was made for many years and used on both spark and valved transmitters.

I am wondering if anyone can give me an idea of its age and any details about it and possibly a museum that would value it in its collection. It is not intended to go to someone's private collection. Your assistance in this matter would be appreciated.

ALARA

Margaret Blight VK3FMAB – Publicity Officer

The SYLRA 10th anniversary conference will be held on August 22-24th 2013. The conference is now being held in Roskilde, Denmark. Currently six ALARA members will be attending from South Australia. If there is any further interest, please contact the following:

Organisers: Inger Lundin OZ7AGR mobile: +45 21 62 56 18 or Bjarne Lundin OZ2UV mobile: +45 51 34 68 30, or email *lundin@get2net.dk*

Home telephone is +45 56 14 19 07 and home address is Plantagevej 9 DK-2680 Solrød Strand, Denmark. *http://wikitravel.org/en/Roskilde or http://oz.sylra.is*

Membership news

We have had two new sponsored DX members join ALARA. Jean VK3VIP met Marita OH4KIZ in Melbourne during a visit from Finland and has sponsored her. Maggie H44MK is the only local Solomon Islander to hold an amateur licence in H44, and is known to be a good contact with the licensing authorities there. She is a member of the H44IOTA DXpedition currently sailing their way through several islands of the Solomons. Lyn VK4SWE has sponsored Maggie, as well as giving a helping hand to the DXpedition.

Elaine VK3EQY presented a talk 'Technology and Time' on Radio National (621 AM in Melbourne) on June 30. Elaine considers that technology is very much within the scope of radio operation and considers that it applies very well to the subject.

VK5 – Jean VK5TSX

Winter has finally arrived in SA. We had some lovely weather during autumn but now Mother Nature is reminding us it is now winter. Consequently, it is the time of year when a number of our ALARA members look for warmer climes. Maria VK5BMT disappears and together with her OM has headed north to escape the cold, and in a few weeks Lesley VK5LOL and her OM will be heading off in the same direction. Christine VK5CTY has had a couple of weeks in Melbourne, before she heads off with Jenny VK5FJAY and her OM, and Tina VK5TMC and her OM to attend the SYLRA meet. While Jenny and Christine will be away for about five weeks, Tina and her OM are extending their trip to incorporate the US.

VK3 news

On Friday 14th June a group of friends met for an evening meal at the Mountain View Hotel in Glen Waverley. A number of those present were members of the EMDRC, and many were also members of ALARA. It was very much a 'catching up with friends' evening and a special guest for the night was Christine VK5CTY from South Australia who was in Melbourne visiting family and brought her daughter Marian along with her.

It is always a pleasure to meet up with operators with whom we have communicated via radio but seldom have occasion to meet with personally. Christine has been very involved in ALARA matters, both in South Australia and nationally, for many years and is a past president of the organisation. The night provided the opportunity for much interaction and enjoyment and everyone seemed to have a good night. Present were Christine VK5CTY, Marian, Robyn VK3WX, Elly, Michelle VK3FEAT, Christina, Michelle VK3FEAT, Susan VK3UMM, Jean VK3VIP and Margaret VK3FMAB. OMs present were Steve VK3VM, John VK3DQ, David VK3DRV, Colin VK3PN and David VK3EW.

VK1/2 - DOT VK2DB

It's easy to tell it's winter – mid-afternoon with 12° and rain. However, we did have a rather good autumn. Over the long weekend in June, OM John and I attended the Port Macquarie Field Day, always a good meet. I sat at the ALARA table and when not busy I roamed the many trash and treasure tables. Carol VK2FCSR was there with her OM Gary VK2ZKT. It is a very friendly field day and there were 75 people at the dinner on the Saturday night at the local golf club. There are foxhunts held during the day and a lucky door prize with many smaller prizes given out during the day. It's usually the wettest of long weekends but this time the weather was perfect.

VK6 – BEV VK6DE

At the VK6 YL lunch in May, 13 attended, including some of the people who were in Perth for the WIA AGM.

Information from Norway – Unni LA6RHA

Apart from amateur radio, I have one other hobby which for me is not only a hobby, but something which helps rescue units in their exercises. I do casualty make-up and special effects. Through participating in an exercise with members of 'People's aid and Red Cross' in the early 90's, I found out that their casualty make-was not good. The injuries were looking far from realistic. So I decided to do some research in this and began to go into a new world which mostly at that time was on film. I found out that to learn this 'art' I had to go outside Norway to learn things from the basics and from professional make-up artists. So I ended up as a member (after passing exams in anatomy, first aid, stage acting and casualty make-up) in the British 'Casualties Union'.

Today after 11 years as a member, I am allowed to act as a casualty in exercises over in the UK. A week's course at Delamare Academy helped a lot. Make-up artists from there are currently working for Steven Spielberg.

The exercise was even named after me 'Exercise Unni'...hi. The coast-guard flew me around the whole of Shetland (confined area training) in their Sikorsky helicopter as a thank you for helping them out.

I also held a presentation in 'the use of casualty make-up in exercises for rescue units' (around Reykjavik in Iceland for the Falkland Defence Force). I instruct how to become a casualty make-up person for, among others, Red Cross (I am not a member), civil defence and military personnel.

After 17 years in casualty make-up I have experienced a variety of things with special military forces, UN forces, sea rescue training, plane crash and hijacking on Svalbard and much more.

Together with radio, the above hobby has brought me a lot of joy and hopefully a lot of help to rescue units around. When it comes to casualty make-up, I always help out at events, exercises, exams and the like when children are involved. I have also helped students when they do low budget films. When out on trips with or without radio, I always take my video camera. I have done video and editing the whole way back to the time when we had to take the film out, turn it, and put it back in, and three minutes of film cost a fortune. To edit I cut and glued.

These days I am on my camera most of the time when we are out travelling. Films of the expeditions at Falklands, Fair Isle and others are all down on DVD, edited down to under an hour, putting in text, comments, music and transition. Plus making covers for the DVD and the cover holder. I have a whole library with video which are all edited like these.

Silent Key

Diana Hughes G4EZI

It is with great sadness that I have to report the passing of Diana G4EZI. Diana died on 28th May 2013 in Leeds, England, from pneumonia coming on top of complications associated with pancreatic cancer.

Diana and I had never met; however, we often had radio contacts in the 1980s, and exchanged letters and Christmas cards for most of the thirty years of our friendship. I will miss her witty sense of humour very much.

Our common interest was, of course, amateur radio, and we were both involved in the early days of the formation of YL groups in our respective countries. Many of the YLs who had their licences in the late 1970s or early 1980s would have known her, or known of her.

She was a founder member of BYLARA (the British Young Ladies Amateur Radio Association) and in fact was member number two. She was Secretary from 1980 (possibly earlier) until 1984 and returned to the committee in 1992 as the Contest Manager. She instigated a monthly chat day called 'YL Activity Day' – 'Call CQ YL on frequencies ending in 88, on the (UTC) hour'. The next 'YL Activity Days" will be the 6th July and the 6th August. See the BYLARA website for more information.

She was quite artistic, her cartoons were legendary! She illustrated many of the BYLARA newsletters and certificates and designed their logo of two YLs which is still used today. She also designed her own QSL card showing a YL cooking the evening meal, with somewhat disastrous results, while talking on the radio! I have seen similar copies of her design, but Diana's was the original!

Sadly, Diana's husband, Richard G4DZI, died of a brain haemorrhage in 1990. She was quite determined to keep up her amateur radio activities after Richard's death, but then came to a point when she felt it was time to move on. Professionally, she was a teacher, but continuous bouts of ill health forced her to give up work. She then became involved in spiritual healing, becoming a tutor in the NSFH, now known as The Healing Trust, but kept her church membership. She met her partner, Trevor Griffiths, in the mid-1990s, both being members of their church choir and the Alwoodley Community Association choir, where she often sang soprano solos, favouring comic songs if possible. I am deeply indebted, not only to Trevor for informing me of her death, but especially to Angelika (Angie) Voss G0CCI, and Shirley Smith GM4LUS, both of whom were also early BYLARA committee members, for providing some of this information to me.

Vale Diana G4EZI.

Contributed by Jennifer Wardrop VK3WQ/VK5ANW.

Michael ('Mike') Bazley VK6HD

Steve Ireland VK6VZ and Brian Machesney K1LI

Michael ('Mike') Bazley VK6HD is regarded by many as simply the best West Australian CW DX operator there has ever been.

For approaching half a century, Mike gave out contacts with CQ Zone 29 to radio amateurs around the globe. When he passed in April 2013, Mike's computer log had over 100,000 contacts in it and he was the top Australian station in the ARRL DXCC Honour Roll List, with all 340 current countries/entities worked and an overall total of 369 (mixed mode), taking into account countries that have been deleted.

Although active on all the amateur bands from 1.8 MHz through to 28 MHz, Mike was most passionate about low-band DXing, in particular on 160 metres and 80 metres. He worked 260 countries on 160 metres and 329 on 80 metres – the former total far and away the highest total of countries worked from the southern hemisphere on the 'topband'.

As his good friend George Taft W8UVZ noted at a remembrance held for Mike in the USA at the Dayton Hamvention 2013 Topband Dinner: 'Considering that Western Australia is some 6,000 – 10,000 miles from most northern hemisphere populated areas makes these totals truly amazing. Getting through the EU [European] or JA [Japanese] pile-up became a way of life for Mike. As a gentle person with a very laid-back demeanour, Mike could quickly become a persistent DX chaser when a new one came on the air.'

Robin Lyon VK6LK, also one of Western Australia's finest DXers and a close friend of Mike's for several decades makes a similar observation in a Legacy remembrance: 'His success was no doubt due that he followed the DX principles of listening, listening and again listening, patience and perseverance.'

Mike Bazley VK6HD – SK.

George also noted that Mike's style of operating meant that low-band DXers everywhere always had the best possible chance to work Zone 29: 'Mike would CQ and work the pile-up until propagation conditions disappeared or there were more no more callers. He was our CQ Zone 29 in most logs and, in many, our first Australian contact. The contest multi-ops will tell you he was most often in their low-band contest logs for Zone 29.'

Mike was both a striking CW DX operator and a striking person to meet – being some 1.95 metres (6' 5") in height and the epitome of the description 'gentle giant'. Originally G3HDA, Mike came from an amateur radio family – his father John was G2BOZ and his elder brother John was first licensed as G3HCT and is now VK4OQ.

Prior to migrating to Australia in the mid-1960s, Mike was a very successful CW DXer and contester in the UK – as were his father and brother. The results of the 1967 CQ WW CW contest show Mike as G3HDA in 10th place in the World, also beating Al Slater G3FXB to be the top English station. His brother G3HCT was top in the world on 21 MHz, whilst their father G2BOZ was the 2nd placed English station on 28 MHz.

Mike was happy to share his amazing knowledge of radio and propagation if you were inquisitive about those things. He was an excellent teacher – both in amateur radio and at Western Australia's Murdoch University where he was the head of the accounting teaching department at the time of his retirement. Owing to his passion for radio and perseverance in working the most difficult of radio 'paths', he had a knowledge of these from a Western Australian perspective that was second to none.

Mike had a very open and inquiring mind, but was humble and didn't preach to others about what he discovered. After trying both horizontal and vertical antennas for transmission on 1.8 MHz, he found, against prevailing wisdom, that a predominantly horizontally polarised antenna generally worked best for DX from where he lived. To thoroughly test this hypothesis, he had built a 1/4 wave inverted-L antenna with an 80 foot vertical section over a full broadcast-type ground screen of 132 1/4 wave radials – a huge endeavour - and then spent about two years testing it against an inverted vee dipole, making hundreds of signal comparisons in the process.

Finding, slightly ruefully after all this hard work, his original hypothesis had been correct, Mike simply took the vertical antenna down without public remark. When asked by a friend why he hadn't publicised his discovery, Mike simply smiled and said what worked for him where he lived might not work for others.

At the conclusion of his remembrance at the Dayton Hamvention Topband Dinner, George W8UVZ asked for a round of celebratory applause, rather than a moment of silence, for Mike. This was entirely fitting as the world of amateur radio DXing has a lot to thank VK6HD for – and Mike would have appreciated the gesture.

Mike's good friend Peter VK6RZ is keeping the VK6HD legacy alive by acting as his QSL manager – for more details, see *VK6HD@QRZ.COM*

Deep sympathies to Mike's widow Pam, his children Suzanne, Juliet, Michelle and Richard and his brother John VK4OQ/G3HCT.

VK3news Amateur Radio Victoria

Jim Linton VK3PC
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w *www.amateurradio.com.au*

ILLW in August - we take part

The International Lighthouse and Lightship Weekend fun-event is always held on the third full weekend of this month, making it 17-18 August this year. Again activating the Timeball Tower at Williamstown is Amateur Radio Victoria VK3WI. Heading the crew of several will be Terry Murphy VK3UP with the portable station set-up and operating on both the Saturday and Sunday.

Do listen for VK3WI which issues a special QSL card for the occasion. It will be very active on the bands and also seek to work many others who have ventured to lighthouses, lightships and marine beacons.

As a main antenna the centre of a vee-shaped wire dipole is mounted high up on the Williamstown tower and orientated to minimise local shipyard construction noise. Terry VK3UP augments the set-up with a ground based vertical and a VHF-UHF antenna.

The site is made available to us by Parks Victoria. This will be the 10th activation of it in the ILLW. The structure began as a lighthouse in 1852 and the bluestone tower became an early navigational aid for the settlement and sailing ships. Built of local basalt it is the second oldest in Victoria after the Cape Otway Lighthouse. From 1858 until 1926 its large ball on the top was dropped at 1 pm each day to allow shipmasters moored offshore to correct their chronometers.

In 1932 it was adapted for use as a lighthouse by the addition of a circular brick tower, until 1987. The Williamstown Historical Society had the added tower work removed and then restored to its square bluestone Timeball design.

A functional new replica time ball mechanism was restored by the Point Gellibrand Rotary Club to commemorate the history of the site, which was officially opened in 1990. It sits in the Point Gellibrand Coastal Heritage Park administered by Parks Victoria, and the area was saved in 2000 from being turned into a housing estate by the then Premier Steve Bracks, who declared it an historical site.

Education is available

It is pleasing to see a good steady turn-up of candidates at the Foundation licence training and assessment weekends.

During the Saturday they undergo the theory, regulations and practical training under the guidance of those with the knowledge and experience, helped by quality training methods. While still fresh in the memory the candidates return on the Sunday for their written and hands-on assessments.

Recent candidates are those who have meant to do it years ago, newcomers to amateur radio looking either to use it as a recreational pursuit or an extension of their vocation. They vary in age from youngsters through to those very late in life, but all have a desire to be good radio amateurs with many seeing the Foundation licence as a way to begin their journey.

The big event takes shape

Consideration has begun of potential speakers and events for the Centre Victoria RadioFest to be held in February 2014.

If you have a presentation or something of interest for a wider audience, or would like to see something explained in greater detail, then please let the organisers know soon.

The event in February at the Kyneton Racecourse is the largest of its kind in Victoria being centrally located within easy reach by road to Ballarat, Bendigo and Melbourne. It attracts a wide attendance including those from interstate and overseas.

Contact the Secretary, Ross Pittard VK3CE in writing or at *vk3ce@amateurradio.com.au*

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Steve Ford, WB8IMY

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Geelong Radio and Electronics Society

Rod Green VK3AYQ

It is 50 years ago that the Geelong Radio and Electronics Society was formed. As is customary with such events a special celebratory dinner will be held at the local RSL club. To also mark the occasion the special call sign VK3ANR50 will be used from August 25th to the 31st. Club members will be on air during this time to contact as many stations as possible. All amateurs working VK3ANR50 will receive a special QSL card as a record of the contact.

For readers not familiar with our society, the following is a précis of the history and achievements of both the society and its members.

Photo 1: Neil VK3XNH and Neil VK3XLJ making 70 cm antennas in the well-appointed workshop.

The first fifty years

In Geelong fifty years ago there was a small group of people who could aptly be described as 'rebels'. They belonged to the Geelong Amateur Radio Club which was and still is a very successful club. In some cases these 'rebels' had even held senior positions on the committee of the GARC. However, for reasons best known to themselves, they thought that something was lacking with the club. They felt that there was a need for a club that catered for all aspects of radio communication as well as audio, radio control and general electronics. So they decided to fly in the face of danger and do something about the situation.

An advertisement was placed in the *Geelong Advertiser* for persons interested in forming a club for radio and electronics. The initial interest meeting was held in a private home and with enough people present it was decided that the Geelong Radio and Electronics Society would be formed. A constitution was agreed upon, and a committee of management elected. This committee knew that there was a big job in front of them, but they rose to the occasion. The first job was to find a meeting place. The first meetings were held in a private residence which was far from satisfactory, but it was not long before a meeting room was leased at the Geelong Guild Hall. This was the headquarters for Scouting in Geelong, but it was soon apparent that the society needed a place of their own.

Negotiations were held with the Belmont council to rent a disused hut on the Belmont Common. There were two huts in this location that had originally been used as a migrant hostel, until 1952 when the Barwon River flooded and the residents had to be relocated. Negotiations were successful, and the task of building a permanent home began. Weekly meetings were held in these rooms until 1995 when the Barwon River flooded again. The council ordered that the buildings which had suffered severe flood damage had to be demolished. The club now had to decide whether to disband or relocate. With determination the members decided to continue, and they again started to meet at the Guild Hall. However these rooms were again deemed unsuitable in the long term, and meetings were shifted to a Uniting Church hall in Geelong West. This was until the meetings were again shifted to the present meeting rooms in High St., Belmont.

As can be seen, the members of the society had risen to the challenge even in the face of adversity. Firstly they completely renovated the old migrant hostel hut, a job which took many years to complete. Then, after the 'great flood' they again remodelled a shed in Belmont, a job which again took quite a bit of time. But in addition to these achievements they also embarked on many other projects. Classes were held for those wishing to obtain a license to operate an amateur radio station. Basic electrical and radio theory classes were also held for the many junior members who had joined the society after its formation. Members also helped groups of school children, Scouts and Guides to build up electronic projects. Members took part in field day competitions, and also were active in the Wireless Institute Civil Emergency Network.

The members who first founded the society were many and varied. They came from all different trades and professions. Some had tertiary education but many did not. It is interesting to note that many of the junior members went on to follow a profession as radio tradesmen either in the domestic market or the armed services. Some became engineers, computer programmers, or worked in research. All of these had obtained their initial knowledge of radio and electrical theory because of their association with the society.

Individual members also achieved many things due to their association with the society, and the enthusiasm that comes with associating with like-minded people. Over the years members have constructed their own equipment. Much of this was radio equipment, but homebuilt audio equipment was also well represented. One member achieved fame for his work in communicating with other amateur stations by bouncing signals off the moon. Many more built and operated their own amateur television stations. When home computers became available members used these to connect their transceivers to one another by using the packet radio network. The members explored the use of the much newer digital modes, as well as being involved in the restoration of old valve or 'vintage' radio equipment.

Photo 2: The GREC library and reading room.

To say that the society has been successful would be quoting the obvious. This success came through hard work and dedication from our many members over the years. But we must remember this small group of rebels who had foresight, courage, and determination to initially form the society: Because those people left a legacy for the radio and electronics enthusiasts of Geelong to enjoy.

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VK3news Geelong Amateur Radio Club

Tony Collis VK3JGC

Regenerative Receiver night

Following on from the highly successful Crystal Receiver Night on 27 April, 2012 and targeted at encouraging construction and experimentation, the GARC introduced a follow up Regenerative Receiver night which saw a collection of original receivers from the 1920's to the 1950's along with faithful reproductions built by the club members. All the receivers on show were operational albeit constrained, in the main, to the medium wave band but with at least one encompassing 160 metres. Because of the number of exhibits each participant was only allowed about five minutes to demonstrate the operation of their receivers to the membership.

The receivers ranged from single transistor systems to those using thermionic valves in their designs, complete with schematics and write ups from the magazines they were sourced from. As can be seen from Photos 1 and 2 a considerable amount of effort was used to produce some very professional looking equipment.

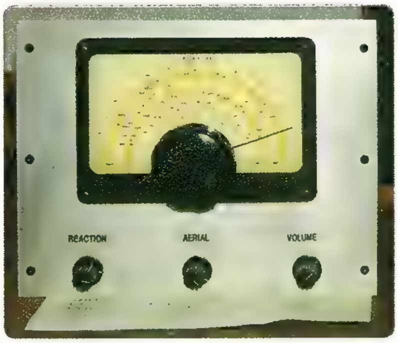

Photo 1: The offering from Bert VK3TU.

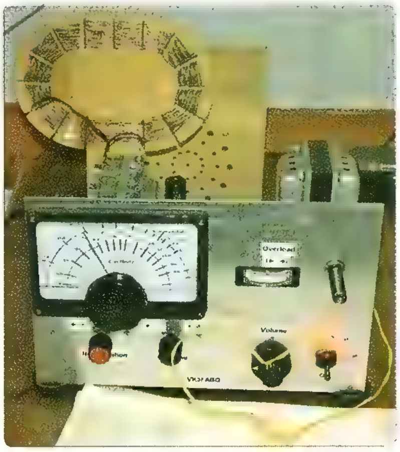

Figure 2: The receiver displayed by Lou VK3FABQ.

Figure 3: Ken VK3NW, David VK3QM, Peter VK3ZAV, Bert VK3TU and Lou VK3FABQ.

Whilst the GARC has a solid reputation for designing, building and operating UHF and microwave equipment they also have an enthusiastic contingent that collects historical radio equipment, pre and post WW11, some of which are, on special occasions, loaned to local museums.

At the conclusion of the demonstrations the club members then voted as follows on the various categories:

Best Beginner: Ken Jewell VK3NW
Most Authentic: David Learmonth VK3QM

Most Innovative: Bert Gnaccarini VK3TU

Most Bizarre: Peter Ward VK3ZAV

Best Performer: Aloysius Hoseman VK3FABQ

Best Overall: Aloysius Hoseman VK3FABQ

The certificates were designed and produced by Lou VK3ALB. It is unclear at this juncture as to what the follow up to this exercise will be; but it is certain that this Back to The Future approach will continue as once again the response by the club shows the enthusiasm by the membership for this sort of activity prevails in spite of the technological age we live in. It is to be hoped that other clubs will follow the GARC's initiative, as they did with the Crystal Set night.

VK4news QTC

Mike Charteris VK4QS
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Welcome fellow amateurs to the August edition of 'QTC', as the year 2013 rolls on towards Christmas. This month you will read volumes of news from our Queensland clubs. A very healthy sign is all the activity going on out there in this great state of ours. Be sure to email me with any club news you would like propagated in these, 'Your' pages of *AR*.

Redcliffe & District Radio Club

Club President Peter VK4EA reports that the club will be hosting 'Redfest' on Saturday, October 5th, 2013. The venue for the event will be St. Michael's College, 1-63 The Abbey Place, Caboolture, with kick off at 9 am. Tables will be available for $10 each, with a range of preloved and new items up for sale. Refreshments on the day will be by way of hot food and cold drinks available at the venue. There will also be a live display of Digital ATV for those interested, and for those who have never seen this amateur mode in action before. So, mark the day on your calendar, consult the XYL for a leave pass and roll up for a great time to remember. For all inquiries, email *redfest@redclifferadioclub.org.au*

Also from Redcliffe this month, the results of the recent AGM held on June 10th, 2013, which has seen a few changes in the executive. Congratulations go to the Club's newly elected President, Peter VK4EA. Peter, on behalf of the club thanked David VK4DC for his wonderful effort over the past six years as President. The position of Head Scribe saw Roger VK4ZLQ elected unopposed, while Ian VK4UL holds the club's purse strings as Treasurer for another year.

SEQATV Group

The reinvigorated executive for South East Queensland Amateur Television group have decided that they are determined to provide ATV repeater access to as many people as possible in south east Queensland. Undertakings by this group will include the building of a Linked Digital Repeater System, with outputs at Maleny, Oceanview, Mt. Kynoch and Springbrook. These repeaters will provide FM and DVB-S inputs, and will involve a great deal of work to build the network and establish the linking system, so stayed tuned for further updates. Currently VK4RKC (Oceanview), is on air and providing inputs on 1250 MHz FM, 1245 MHz DVB-S as well as 2415 MHz FM, beaming south on 446.5 DVB-T. Those wishing to view these transmissions are informed that a cheap digital set top box with manual tuning can be utilized for good results. For the more adventurous, the SEQATV group is offering the experience to build your own kit. The transmitter details are as follows, 18 watts on 1250/1283MHz using the FM mode of transmission. The enclosure, heat-sink and connectors are not included, and the cost of the kit is just $150.00. For further information, contact the group Secretary by way of email at *seqatv@rumpleteazer.net*

Caboolture Radio Club

In news from club Secretary Peter Hewitson VK4QC, we hear that like a bolt from the blue, he recently received a phone call from the local Caboolture Shire Herald, with a request to do an article on the radio club. Apparently Peter did not have to be asked twice, and an interview ensued on what was labelled as the 'World's First Social Network', amateur radio. Peter was kind enough to explain to the reporter that the club had 37 members and plenty of room for more. He also stated that the club was utilizing cutting edge technology in the form of high tech computer software and satellites to tune into a global network of radio enthusiasts. Well done to Peter and the members of the Caboolture Radio Club. I trust that indeed the newspaper article as well as the club's July Ham-Fest did in fact raise the profile of amateur radio in their area. It could well only take a phone call to your local newspaper to emulate the actions of the Caboolture Club, with results that see your club profile and membership increase for little or no outlay. And if you are wondering, well yes, there was a very nice photo of Peter operating his equipment just to give weight to the saying that 'A picture paints a thousand words'. Give it some thought fellow amateurs and let me know if you have any success with your local newspapers. In other good news from the club, I hear that they have three new successful Foundation License members who recently joined our ranks after passing their exams. Congratulations to those people and welcome to the ranks of amateur radio.

Coral Coast Net 7.060 MHz, daily

I thought this month I would say a few words about perhaps one of the oldest HF radio nets in Queensland. The net runs daily on the frequency of 7.060 MHz from about 0630 local. It originally came to the airwaves on September 28th, 1967, some 46 years ago, and was set up by none other than Les Bell VK4LZ. As the name suggests the net had check-ins from all along the Coral Coast, whilst in its current format it has seen regular check-ins from as far north as New Guinea to as far south as Tasmania. It was in fact only the other morning that net control took a call from a station in Indonesia as well as one from New Caledonia, to quote the exotic. Until recently the Coral Coast Net actually had an Early Birds check-in, which was run for many years by Gordon Gray VK4AGZ, from up north. Gordon has recently retired to the Hervey Bay area, though I am told he still listens to the net. In my brief time of having joined this net with a roving commission a few years ago, I have had the pleasure of knowing as net control the late Gordon Beswick VK4BQ, a true gentleman of the airwaves. In more recent times, net control has fallen to a man who had very big boots to fill, Peter Jones VK4MIT. And might I say what a wonderful job he has done in taking on this mantle. By all accounts the Coral Coast group has grown under his watch, and most if not all would say that it is in safe hands. So, if you're doing nothing most mornings, pop in and say hello to a very friendly group of people continuing the traditions of the Coral Coast group.

Tablelands Radio Group

The TRG has been busy recently looking at various locations in Far North Queensland that have historical and scenic attractions and are radio friendly.

Our first trip was to Coen on Cape York Peninsula, where the telegraph line used to run. Wilf VK4ZNZ, Dennis VK4JDJ and XYL Sue, Mike VK4MIK plus Val XYL of Stan VK4MFA SK and her sister-in-law, Margaret, left Mareeba around 7 am, stopping at Lakeland for a smoko, as they have a very nice coffee and a great selection of hot snacks. We then headed north through Laura on the last of the bitumen road. Then on past the Hann Roadhouse until we stopped at Musgrave Roadhouse, which is an original Telegraph Station House from the late 1870s. It has a wall with a lot of its history on display plus numerous Oppenheimer Poles around the place and is also a good place for a break or camp as the owners are very knowledgeable and friendly. However, we continued our journey for the last 108 km in to Coen, where Wilf and Mike set up tents - $5 per person per night behind the hotel in the extensive camping ground - while the rest of the group settled for the luxury of rooms in the hotel! There were no problems setting up the HF long wire and operating into the various nets, despite the distance.

The assistance of Peter and Gail Clark with their extensive knowledge on its history and guided tour of its Heritage House Museum, which is actually the old Mein Telegraph Station, was terrific and much appreciated by all. We

The remains of the Laura to Maytown railway bridge, built in 1891.

enjoyed the friendliness of this small town and on the last night we all met up for an enjoyable dinner at the pub. We left after three days and stopped off in Laura to visit the well set up and informative Cultural Centre which details its aboriginal, gold rush, cattle, telegraph and social history. The final leg home where, after a round trip of 1000+ km, we looked forward to unpacking and car cleaning!

The second trip was the following week, when Pat VK4MUY, Dave VK4FUY and Mike VK4MIK headed north again, but this time travelling along the coast from Mossman. The first stop was to visit the memorial site of the World War 2 Japanese bombing at Miallo.

Then on to the Cape Tribulation to Bloomfield track which was made interesting due to drizzle and a few creek and river crossings, and although steep in places was nevertheless very scenic. Once off the track, it was an easy drive from Bloomfield to Cooktown with a 'must do' stop at the famous Lions Den Hotel. Before reaching Cooktown we also drove to the Archer Point Lighthouse, but decided that the Grassy Hill Lighthouse site which TRG visit every year for the ILLW, is far more 'radio operator friendly'! It was intended to operate HF from the motel in Cooktown but very heavy rain made it impossible to set up an antenna.

The following morning we set off early and again headed north, going to Laura via the Old Battlecamp Road, which is the old track leading to the Palmer Goldfield. En route we stopped at Lake Emma and the Old Laura Homestead and passed the operating Olivevale cattle station. The old track was scenic despite the drizzle, with again creek and river crossings keeping driver Mike on his toes, while Pat and Dave sat back and enjoyed the views!

Mike played tour guide in Laura showing Pat and Dave the remains of the old railway bridge that was built in 1891 to link Cooktown and Laura into the township of Maytown goldfield but only the bridge was constructed as the gold field was largely finished by then. It was then a look at the Cultural Centre and then home via lunch at Lakeland.

The third trip was a run by Mike VK4MIK to catch up with Ross VK4AQ and XYL Bev at Innisfail then onto Ingham to meet with Jeff VK4AJH and XYL Tania - who translated Russian writing on a Morse key box Mike had acquired from Russia. There was laughter all round as Tania said it said 'telegraph key' and made in 'September 1989' and the checkers number. Jeff has an interesting QTH very near the Herbert River and has a 'friendly crocodile' that has adopted his backyard. Then it was west up the range from Ingham to Mt Fox, which has the remains of a volcano cone and has an excellent camping ground at the Cricket Club. It is also the QTH of Rob VK4ARQ and XYL Caroline. Mike was made very welcome and stayed overnight calling in on the Gnarly Net via Rob's transceiver. Rob has operated as net controller for the morning CW net on 3.599 for many years and then runs the Gnarly Net on 3.600 LSB. The next phase was the track from Mt Fox to the south via Hidden Valley thence to Paluma, an important logging and World War 2 radar location and now an environmental school training centre, then down to the coast and on to Townsville. Mike set up a long wire antenna and operated HF during his Townsville stay. The following day it was a return to the Atherton Tablelands to catch up with Clive VK4FRCH in Ingham who is interested in the AM and CW on ANZAC DAY event on HF and is looking at another AM transceiver and location.

It has been an interesting few weeks travelling with and visiting fellow amateurs and seeing some of Australia's historical and scenic locations plus talking with others about our hobby. We can but recommend the various locations to others *but* one needs to check road conditions before travelling and staying, camping or rooms on Cape York Peninsula. But if you do travel, please stop off along the way and learn its history and see its towns as they have much to offer. de Mike VK4MIK.

Ham Radio 1920s style

Recently I came across a very interesting site that is well worth a visit for anyone who has ever appreciated amateur radio in the 1920s. What's more if you have ever wondered how they were built or even contemplated building this equipment yourself in the 21st century, then take a few minutes and pop along to 'The VE7SL Radio Notebook' on Google.

Till next we meet here at QTC, the Voice of Amateur Radio in Queensland, cheers and 73.

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VK6news

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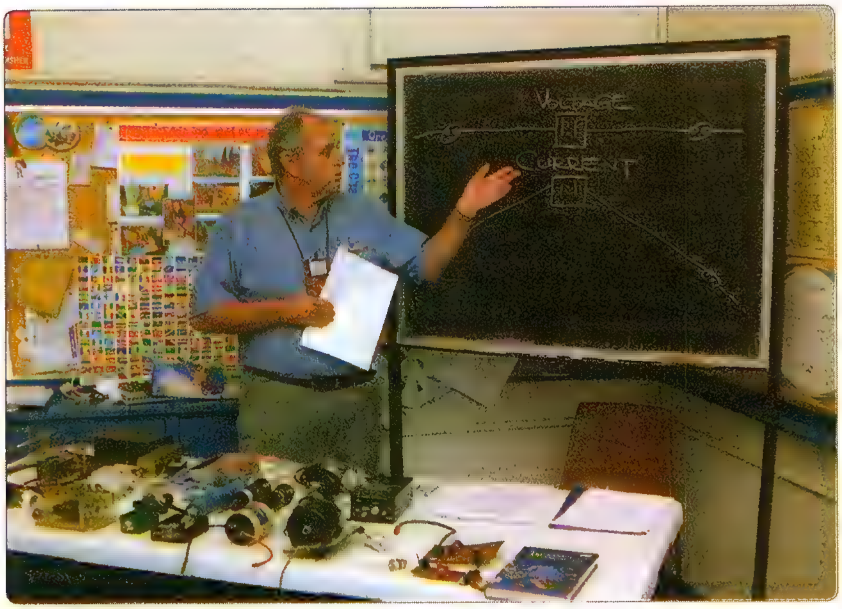

Photo 1: Mal VK6LC discussing voltage and current baluns at HARG.

I think everyone must have been busy with EOFY stuff this month, as news is very thin on the ground. Our stalwart, Bill VK6WJ from **HARG**, has come good though so here is this month's contribution from them thar Hills.

Hello again from HARG. On Saturday 29th June we were fortunate to be given a very comprehensive talk on the mysteries of baluns by Mal Johnson VK6LC. Mal explained the difference between voltage and current baluns and where they were used. We were also given a 28 page set of notes with details of the baluns required for a range of different antennas and construction details for those baluns and ununs. Mal also covered all the safety aspects such as 'do not overheat ferrites with too much RF', 'do not drop ferrites' and 'make sure sharp edges on ferrites are covered with Teflon tape'. The notes will be available to download from the HARG website – *www.harg.org.au* This talk attracted a number of new visitors to the club and we welcomed the following four new members who decided to sign up on the day, Bob VK6ZGN, Anthony VK6US, Craig VK6VCK and Mal VK6LC.

By the time you read this we will have enjoyed a tour of the Radio Operations Centre at the Fremantle Water Police where maritime rescues are co-ordinated. Thanks to John VK6JGF for organising that and for suggesting that we precede the tour with a pleasant fish and chip lunch by the harbour at Fremantle. Our Annual General Meeting was held on Saturday 27th July and I will announce the office bearers for 2013/2014 in the September issue of this magazine.

On 17th and 18th of August we will be participating in the International Lighthouse and Lightship Weekend from the North Mole in Fremantle so please come along and keep us company for part of the day.

In September, Heath VK6TWO will give us a talk on satellite and ISS communication and the exact date will be announced in the September magazine. Please feel free to join us at any of those meetings. Visitors are always welcome. Until next time, cheers and 73 from HARG.

Photo 2: ILLW at Cape Leeuwin.

Next in line is Anthony with an update from the **WA Repeater Group**, with news on the upcoming Lighthouse weekend activities.

ILLW activity in VK6

Anthony VK6AXB reports that Wally VK6YS will again be leading a team to Cape Leeuwin, operating under the callsign VK6CLL. Located near the town of Augusta, Cape Leeuwin is the most south-westerly point of the Australian mainland, and its lighthouse is one of WA's most iconic. During the day the light is open to the public, and the site attracts many visitors from all over Australia and beyond. Wally says this is one of the main reasons for operating here: 'We hope to have fun using the weekend as an opportunity to promote amateur radio to the public, to join in the RD contest, and to work as many other lighthouses as we can'. Cape Leeuwin in winter can have some wild weather, and Wally has experienced this before: 'Strong winds and heavy rain make setting up and operating a challenge, but we will put up the best station we can on the day, and VK6CLL aims to be on-air on all HF bands, including 160 m, so if you hear us, please give us a shout'.

Photo 3: Wally VK6YS at Cape Leeuwin.

Also on air will be Nigel VK6NI ably assisted by XYL Jane VK6FJPD, operating as VK6CNL from another historic and well-known lighthouse, located at Cape Naturaliste near Dunsborough, 100 km north of Cape Leeuwin. This light is also open to the public and a steady stream of visitors seeing amateur radio in action is expected, although Nigel despairs at the questions about the 'Hills Hoist' outside the lighthouse and has to explain it is a Spiderbeam capable of contacting amateurs around the world.

Other lighthouse activations include the Hills Amateur Radio Group operating as VK6AHR from the North Mole lighthouse at the entrance to Fremantle Harbour and the Bunbury Radio Club operating from the Point Casuarina lighthouse in Bunbury. We wish all lighthouse activations every success, and look forward to working you over the weekend. This is becoming an extremely popular weekend around the globe, so why not participate?

One of the main events in the WA radio calendar in August is the **Northern Corridor Radio Group** annual Hamfest on Sunday 4th. Hopefully you will have received this month's copy of *AR* magazine just before the event to remind you!

As usual it's held at the Cyril Jackson Rec Centre on Fisher St, Ashfield 6054. Doors open at 9 am for buyers and 7.30 am for sellers.

This year the NCRG has bought an Icom IC-718 HF radio as a raffle prize, along with other prizes donated by our traders on the day, so be sure to get your tickets. There are no major radio dealers in WA anymore, so please come along and support our smaller traders who will be there on the day and endeavouring to provide you with some new equipment to look at and buy! Traditionally we get around 300-400 visitors through the doors which is amazing considering our isolation and small amateur population. Every year people make the trek from Kalgoorlie, Bunbury, Albany, Geraldton and other far flung corners of the state!

Our legendary beef rolls and hot dogs will be available in the dining hall along with hot and cold drinks. Also in the dining hall this year will be VK6 NewsWest doing the broadcast live from the event and the QSL Bureau with a video presentation running all day showing DXpeditions from around the globe, something to watch while you eat!

Admission is still the same $5 per person and that includes traders, NCRG members, everyone! That is the only way we can keep the table hire to free, not $20 or $30 per table as in other hamfests interstate. This year the raffle will be drawn at 12 midday rather than the usual 1.30 pm, so get your raffle tickets and the best of luck. Hopefully we will all have the usual excellent day out and you can meet those friends you speak to but only see once a year.

That's it for the notes this month, hopefully there will be a bit more input next month to go with the Hamfest report!

Vy 73 Keith VK6RK.

Help us

Contribute to the Weekly WIA News Broadcast. See our website for details.

www.wia.org.au/members/broadcast/contribute/

SOTA

Allen Harvie VK3HRA, Andrew Davis VK1DA and Bernard Petherbridge VK3AMB

Multi summit activations

SOTA activity is still increasing in VK, and work continues on bringing additional regions and/or states on-line as well as expanding the existing list of valid summits. In this article, we will take activations a step further and explore multiple summit activations as well as offer a process for dealing with the pile up that follows a *CQ SOTA* call these days.

SOTA is not the exclusive domain of super amateurs: any amateur who has a portable radio and access to a local summit plus a little free time can be an activator.

40 m and 2 m are alive on weekends with SOTA and there has been a marked increase in 2 m single band single summit activations. With nothing more than a 2 m handheld and a free afternoon, the beauty of such activations is the ability to travel light in response to good weather.

Two metres is more than sufficient to activate summits provided the summit is located within range of likely chasers. On a recent trip whilst activating my final summit, three contacts were made on 2 m before the squid pole for the HF antenna was even up. The first contact was with new activator VK3ANL Nick who had qualified his summit with only a 2 m handheld and my final contact was with another activator VK3MRG Marshall, who had also qualified his final summit for the day purely on 2 m. Having keen chasers who monitor 2 m helps, as does posting Alerts/Spots on SOTAwatch. In addition, you can let chasers know you are on site by making calls on known repeaters then moving to a simplex frequency to make the contact. There have also been situations where chasers have scanned for other operators to help activators qualify the summit.

Multi summit activations

This does not mean that have you to spend all day climbing peaks. There are likely several summits within range of chasers that can be activated with a 2 m hand held in a single day. It is just a matter of planning the activations thoroughly. (It is worth reviewing previous articles as the planning requirements previously discussed remain the same – find your targets, plan your access and verify your equipment.)

Searching activator blogs is one of the best ways to identify groups of summits that can be visited in a day. Read about the summits that were grouped together and why? Did it work for them? Email your questions if you have them. You will find activators are happy to discuss why and may send you pointers to maps or give track and access advice. Look for common roads to the grouped summits allowing the activation of additional summits on the way home.

Summits that have communications towers on the peaks will usually have well formed 2WD tracks making navigation to the activation zone easy. Others may have 4WD tracks, so in these instances it is simply a case of parking your car at a lower site and strolling along the defined tracks whilst enjoying the views until you find a trig point. Remember the required access rules, to ensure valid activations (25 m vertically and the final 125 m horizontally, non-motorised).

Once you start to venture further afield, the range of a 2 m handheld becomes limited. You have to consider going to HF or enhancing your antenna. A 2 m Slim Jim antenna to enhance the performance of a handheld may make the difference between qualifying a summit and just going for a walk with a radio.

You also have to pay particular attention to batteries to ensure there is enough power to support extended trips. In the case of handhelds, consider purchasing a high capacity aftermarket battery pack so you have longer life and can carry the standard unit for backup.

Whilst NiCds are usually chosen for devices that support internal batteries, there are several options for external batteries. 5 Ah+ LiPo batteries are proving popular. Whilst they are not as robust as gel cells, the difference in mass (~800 g versus 3500 g for similar power) is supporting their increased use.

Having selected a couple of close summits, charged your batteries, packed your antenna and lunch, when you reach the summit you need to make contacts. If you have posted alerts on SOTAwatch, and the Yahoo SOTA.Australia group, regarding your intentions and are running reasonably close to time, chances are there will be several chasers waiting for your get on air. There may also be other activations that *you* wish to chase.

QSO management

After reaching the activation zone and setting up your antenna, you ensure that your desired frequency is free and make your first call only to find yourself in the middle of a pile up normally reserved for rare DX. This is becoming the normal response to a SOTA station these days and can be intimidating for new and experienced activators alike, so let's stop here and look at the process on the summit.

Multi summit activations will limit the time for contacts, so it's best to whizz through the contacts as quickly as you can. This also allows chasers to look for other contacts, in what can be tight operating windows, and ensures that you qualify the summit before running out of time, battery or good weather.

Therefore, contacts with other activators should be priority thus allowing both stations to revert to working chasers. To achieve this, the activator needs to take charge of the process and flag to chasers that they want to make efficient contacts and are looking to work stations in a logical manner. A suggested sequence is – summit-to-summit, mobile, portable, QRP all other stations.

How does this work? Here is an example:

Activator: *'CQ SOTA this is VKxABC portable on VKx/RR-001 looking for summit to summit contacts, over'.*

If one or more stations respond, then make a list of the call-signs heard, if possible, and continue to set the pace and style of the contact.

Activator: *'VKyCBA portable this is VKxABC portable, (optional: Good morning/afternoon, thanks for the call,) your report is five by nine, five nine, my summit code is VK1/RR-001, over'.*

By keeping your response concise and directed, you are letting the calling station know that your intent is to make the contact a quick one and prompts the chaser to respond in a similar manner. Note that you have already given the report to the chaser.

Chaser: *'VKxABC portable this is VKyCBA portable, Roger/Romeo, thanks for the report, you are five by seven, five seven I am on VKx/BB-010. Thanks for the contact. VKxABC portable this is VKyCBA portable, over'.*

Activator: *'VKxABC portable this is VKyCBA portable, Roger (or Romeo) and thanks for the report and the contact. VKxABC portable is clear and calling for any <mobile stations>' (or call in the next call sign previously noted).*

If several callsigns were noted in the pileup, you can acknowledge them and that has some benefits including: the callers know they will be the next to be worked so can prepare their signal report and the station currently being worked knows there are others waiting so they should make the contact short. It will also alert other chasers to wait patiently until those on the list have completed contacts, and to not call until the activator again calls 'QRZ?' or 'CQ'.

In this procedure it is vital that the signal report is included in the first transmission from the activator wherever possible. That tells the chaser not to muck about rather to give a report and get the contact over with. It does not matter if the activator did not look at the S meter or cannot read the indicator in bright sunlight, as a common sense approach to the signal report would be appropriate. The chaser will be less worried about the absolute accuracy of the report and more concerned with logging the contact.

This approach also requires dropping the comment – 'I will give you a report on the next over'. If you do postpone giving the report, you commit to another two overs to confirm the details. In that time the activator could be making another complete contact.

To speed the process, the chaser should have already noted the activator's callsign and signal report in their log (and probably the summit code, unless the chaser is the first caller) and be ready to respond with their report.

If the activator is working through their list then they can say:

Activator: *'Clear with VKzBCD and now calling the next on my list, VKzDEF, good morning thanks for the call, you are five by seven, five seven, how do you copy me, (callsigns)…'.*

By controlling the sequence of operations, the activator is making sure that they are in charge. But also by noting all callsigns copied, it makes it possible to work stations in a fairer sequence.

When you have exhausted the callers in one category, declare your intention to move to the next group.

Activator: *'CQ SOTA this is VKxABC portable on VKx/RR-001 now looking for <mobile/portable/QRP/any other> stations, over'.*

Alternatively, if at the end of each contact you simply call CQ without mentioning the callsigns already heard (even part callsigns) a new pileup ensues and the stations that have possibly listened to several contacts being made are now competing with those who have just arrived on the frequency.

Once you know the regulars, you can add personal touches without unduly extending the contact and when the smoke clears you can always return to exchange some chat about the weather, the walk up to the summit and all the other stuff. From experience, if you have plenty of battery power, don't want to close down or go to another summit, or need to get out before the weather worsens, then you will find many chasers are happy to wait for a chat.

Always attempt to work all the callers, unless of course your safety is a concern – everyone wants you to qualify the summit, give summit points to as many chasers as possible and to safely return home at the end of the day.

SOTA: better than cleaning out the shack.

73 for now and hope to hear you on a summit soon.

Erratum On page 11 of July *AR*, please note a correction of a callsign:
"Al Shawsmith Award for journalism: Grant Willis VK5GH, …." should be "Grant Willis VK5GR"

AMSAT

David Giles VK5DG
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Recently there has been some significant progress for AMSAT-NA's Fox-1 project. This 1U cubesat is the successor to AO-51 but is only 1/15th the size. During the 2013 Dayton Hamvention, Tony Monteiro AA2TX gave a presentation on Fox-1 [1]. Also displayed at the AMSAT booth were an engineering model of the satellite, the camera module and a functioning Internal Housekeeping Unit (IHU). People at the Hamvention were asked to tune to 145.920 MHz to hear Fox-1's voice ID.

Fox-1 launch

The big news from AMSAT-NA was that NASA had announced that Fox-1 will be on the ElaNa XII mission due for launch during November 2014. The orbit will have a perigee of 470 km, an apogee of 780 km and an inclination of 64 degrees. This gives it a similar coverage at apogee to SO-50. Depending on solar conditions Fox-1 will be up there for about 11 years. Fox-1 must be flight ready by May next year for integrating with the launch vehicle.

Fox-1 details

Tony's presentation also gave details on the frequencies and modes Fox-1 will use. Fox-1 is based around a mode U/V FM transponder. Uplink will be on 435.180 MHz and will incorporate an Automatic Frequency Control to adjust its receiver to the ground station's frequency to allow for Doppler correction on-board the satellite. This should make life a bit easier for beginners.

The downlink will be on 145.980 MHz with a power output of 400 to 800 mW. It is expected to be usable with two watts from a dual band hand held transceiver and 'arrow' antenna. AMSAT claim it will be easier to hear than AO-51. Low speed telemetry will also be transmitted in the same downlink. This will use sub-audible frequency shift keying (FSK) with forward error correction (FEC), similar to the Digital Code Squelch system found on FM transceivers. It will also have voice identification. Fox-1 has two modes – the transponder mode just described and camera mode. Fox-1's camera has 640x480 VGA quality and is able to take a picture every minute. Camera mode sends the picture in 50 seconds using 9k6 FSK. This will also have FEC so pictures received should be error free and four times the size of SSTV.

Fox-1 will also contain three science experiments. The IHU board has a gyroscope experiment from Pennsylvania State University. Vanderbilt University has a low energy proton experiment which uses several large memory chips and scans for radiation particles flipping memory bits. Virginia Tech has supplied the camera. Data from the gyroscope and low energy proton experiments will be sent on the low speed telemetry stream.

More details have been released about the satellite's makeup. Fox-1 is a 1U cubesat with a mass of 1.3 kg. It will have two metre and 70 cm quarter wave whip antennas. The solar cells are radiation hardened and 28% efficient which will produce a worst case average of two watts. Depending on Fox-1's orientation three to five watts will be available in full sunlight. Fox-1's internal structure consists of nine boards in a stack. Starting at the bottom is the two metre transmitter card. This will produce a maximum of 800 mW output at an efficiency of 70% - not bad at only three volts. Next is the 70 cm receiver with a CTCSS tone decoder. It is planned to have ground stations use a 67 Hz CTCSS tone to trigger the transponder on for two minutes. Then comes the IHU board with the 32-bit micro-controller, and gyroscope experiment. The micro-controller is a STM32L with 384k of FLASH and 48k of RAM. Firmware is based on FreeRTOS, an open source real time operating system. Unlike AO-51, Fox-1 is expected to be more autonomous and not need lengthy uploads of its operating system if it crashes. Above the IHU is the MPPT board with six maximum power point controllers to get the most power from the solar cells for the battery. Taking twice the space is the battery card. This will have a 3.6 V NiCd battery with 12 Whr capacity. The board has the cells, battery protection, thermal controls, telemetry interfaces and hysteresis rods to dampen any mechanical oscillations. The rest of the space can fit four boards for science experiments.

Phase-1

Fox-1 is just the first of four satellites in phase-1 of AMSAT-NA's cubesat program. All satellites will use the same cubesat structure, transponder and IHU but differ with the added science experiments. RadFxSat has been accepted into NASA's ElaNa program but doesn't have a launch yet. RadFxSat

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial amateur radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 0930 Z or 1030 Z depending on daylight saving. Check-in starts 10 minutes prior to the start time. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RBM Blue Mountains repeater on 147.050 MHz

In Queensland
VK4RIL Laidley repeater on 147.700 MHz
VK4RRC Redcliffe 146.925 MHz IRLP node 6404, EchoLink node 44666

In South Australia
VK5TRM, Loxton on 147.175 MHz
VK5RSC, Mt Terrible on 439.825 MHz IRLP node 6278, EchoLink node 399996

In Tasmania
VK7RTV Gawler 6 metre repeater 53.775 MHz IRLP node 6124
VK7RTV Gawler 2 metre repeater 146.775 MHz IRLP node 6616

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT or VK3JED conferences. Past experience has shown that the VK3JED server offers clearer audio. The net is also available via IRLP reflector number 9558. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email. Frequencies and nodes can change without much notice. Details are put on the AMSAT-VK group site.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night. Currently only SO-50 is available.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

contains radiation experiments from Vanderbilt University. The good thing is that these experiments don't use much power or create huge amounts of data so the telemetry can be sent at low speed. For amateurs this means the transponder should be on most of the time. The other two will have experiments from the Auburn University of Alabama. It is expected these experiments will run for a year then the satellites will be handed over to the amateurs for full time use. These two missions have been proposed to NASA and it will be announced in November whether they have been accepted into the ElaNa program. Phase-2 is looking at 3U size cubesats that will allow more power and space for larger experiments and a software defined transponder. Many aspects of ARISSat-1 have been incorporated into the Fox program. Latest details are on AMSAT-NA's new look website [2].

Final Pass

I had the pleasure of hearing a signal from the past – LUSAT (LO-19). Reports started coming early in June that LUSAT's CW telemetry beacon was being heard when the satellite was in full sunlight. The beacon is easily found on 437.125 MHz but the telemetry is now only random dits and dahs. I noted that before it went nearly silent last year that some of the telemetry channels were corrupted. Not quite as exciting as AO-7's return from the dead but another satellite has come back on the air.

References

[1] *http://amsat-uk.org/2013/06/08/fox-1-status-update-video/*
[2] *http://ww2.amsat.org/?page_id=468*

Contribute

Articles and high quality photographs for *Amateur Radio* and *Callbook*.
See *http://www.wia.org.au/members/armag/contributing/*

VK7news

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Beacon news

The six metre beacon VK7RST located in Southern Tasmania (QE37) operating on 50.297 MHz has been upgraded to CW keying and the power increased to 20 watts. This beacon has been operating for over 35 years and a big thank you goes to Bob VK7RX and Alan VK7ZAR for their effort in undertaking and completing the upgrade of VK7RST.

Northern Tasmania Amateur Radio Club

The NTARC clubrooms continue to take shape with a radio training room thanks to Idris VK7ZIR and Andre VK7ZAB. Many other clubroom thanks are in order - Bill VK7AK for his donation of 14 chairs to the club and Stuart VK7BBB for transporting them. Ros XYL of silent key VK7KRR becoming Hospitality Supervisor, baking, restocking and helping to make the clubrooms what they are, thanks Ros. NTARC's June meeting was held at the new clubrooms and heard Joe VK7JG give a great talk on NTARC repeaters and beacons, with site photos, equipment descriptions and anecdotes from someone with a lifetime of experience in the communications industry. The effort Joe puts into keeping this equipment on the air is enormous, thanks Joe. A reminder also that coffee gatherings are held every Monday and Friday at the clubrooms in Archer Street, Rocherlea and these commence from 10.00 am.

WICEN (South)

On Saturday 6th July, WICEN South provided safety checkpoint communications for the Southern Tasmanian Endurance Riders - 20, 40 and 80 kilometre rides around the historic Fonthill property near Oatlands. By all accounts it was a fun event.

Radio and Electronics Association of Southern Tasmania

The REAST June presentation was from Lalla Mackenzie (Lead Community Account Manager - Corporate Affairs, NBN) and Dylan Parrant ZL1VBI (Area Services Manager, NBN) on the technology behind the NBN. This was a fascinating presentation on the technology, methods and support being put in place to provide high speed broadband to the home through one of three methods - fibre, wireless or satellite dependent on distance and population density. The fibre uses the open standard GPON or Gigabit Passive Optical Network technology which was described as light pipes from the points of interconnect in Hobart and Launceston all the way into homes which allow the ISPs to provide their data to and from. The actual glass fibre is 9.5 microns in diameter and is surrounded by many protective layers and there can be 72, 144, 288, 432, 576 and up to 864 fibres. In Tassie the largest is 576 fibres. The equipment being used is manufactured by Alcatel and the fibre is Corning. Much interest was shown and many questions were answered. A huge thank you to Lalla and Dylan for their presentation.

Photo 1: Lalla MacKenzie and Dylan Parrant ZL1BVI with the fibre being used in the NBN rollout. Photo courtesy of VK7TW.

Our DATV Experimenters Nights continued with many interesting segments including equipment and antennas now appearing from the analogue TV shutdown with translators and panel antennas being demonstrated. High powered LED light fittings (thanks Rex VK7MO), 630 metre earth dipole experiments, mid-Winter Dark MOFO festival light beam time lapse sequences and video presentations from previous presentation nights. You can pick up on RF around Hobart – 446.5MHz DVB-T or *www.batc.tv* membership stream VK7OTC on the internet from 19:30.

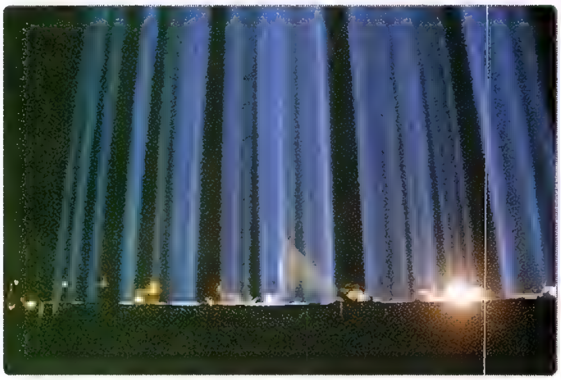

Photo 2: Forty nine high power search lights point 15 km into the sky for mid-Winter Dark MOFO festival in the centre of Hobart. Photo courtesy of VK7TW.

VHF/UHF - An Expanding World

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Weak Signal

In early June, it was good to see some winter Tropo enhancement, thanks to a slow-moving high-pressure area traveling across central VK2.

On the evening of June 3rd stations in the Adelaide area worked across into northern NSW on 2 m - a distance of over 1100 km. Stations involved included Phil VK5AKK, Peter VK5PJ and Bill VK5ACY to the west, and Wayne VK2XN, Brent VK2PB (both in Narrabri) and Colin VK2BCC, east of Sydney. The following morning, June 4th, Bill VK5ACY worked Rob VK1KW on 70 cm with reports up to 5x7.

Winter VHF-UHF Field Day

As is not entirely unexpected at this time of the year, the Winter VHF-UHF Field Day on June 22/23 was a crisp time with overnight temperatures in areas of VK3 plunging to below zero. And while it was relatively dry in this area, VK5 was looking particularly damp on the weather charts. Nevertheless, there was a reasonable level of activity - many stations choosing to operate from the comforts of home.

Rob VK2GOM braved the Wentworth Falls area and reports:

The first round of operating from the contest opening ticked along reasonably, tapering off to the three hours point; then it got very quiet indeed once everyone in earshot had worked each other.

VK2BCC managed to track me down, and came to my operating spot to say hello. Great to meet Colin, and thanks for the assistance disassembling my mast. Quite cold up at Wentworth Falls; I'm guessing it must have been around 5 or 6°C, with plenty of drizzle on and off. I heard very few /P stations; most were operating from home. Looking forward to more activity for the Spring FD!

Things I will change next time:

1. *Give my IC-910 an RF front end tune-up as per the W6PQL instructions.*
2. *Use my Yamaha four stroke generator and 13.8 V PSU for more power rather than relying on the 4x4 battery.*
3. *Fit some sort of T handle to the mast for simpler rotation.*

Doug VK4OE's Field Day experience was one of mixed fortunes:

There's a classical saying that starts: 'The best laid plans of mice and men...' Well, that seems applicable to my situation as far as operating in this event is concerned.

Saturday evening's operating from Mt Gravatt in Brisbane was a fair bit of fun with forty-two contacts in four hours on all bands from 50 MHz to 24 GHz (excepting 5.7 GHz where a still-unexplained equipment failure has arisen), and it was a superb clear night, and not oppressively cold (though I was wearing two pairs of socks and a lined coat that I use when it's snowing in the UK)!

As planned for the Sunday morning, I left home about 3.00 am to drive the two and a half hours down to the Border Ranges National Park, as I have done twice before. When driving at night it seemed like an especially long journey, but the moon light was beautiful and the sky was clear (until just across the border where it had been raining - but that's not the point right now).

In my mind I had everything planned right and it would have come off well, except that about 5.40 am and just 2 km from the final look-out destination (1+ km altitude and north-facing) I faced a large metal bar across the road declaring that it was closed to all traffic! Suddenly my plans ended with no immediate alternatives.

I quickly wondered about 'bigger' options and, knowing that there aren't any alternative sites near there plus the fact that I was a long drive from anywhere, I started to feel depressed about the remainder of the Winter FD event and my chances of spending maximum hours operating on this Sunday morning.

So, instead of planning to operate, I made a snap decision to abandon my contesting efforts and to check out something that I had been wanting to do, and that was to compare the alternative way (distance, road quality, traffic, etc.) of getting to this superb microwave site that had been my goal. That took me a long way further, returning to Brisbane via Murwillumbah and Coolangatta. All along the way I thought several times of the possibility of diverting to one or other familiar elevated place to make a few contacts but, after already having driven for 5+ hours I reckoned that I was just not ready to do all the setting-up of the gear for just a couple of possible hours of operating. And even on the drive up the highway I was fighting fatigue - potentially dangerous - and it would have been even worse had I exerted myself even more.

I have subsequently noticed that the NSW Parks and Wildlife Department does have an 'Alert' on their website for the Border Ranges National Park saying that the part of the park road I was wanting to use was closed but, I think understandably in view of my previous history of just going there without any problems, *I never even thought to check this website. Lesson learned!*

Despite the loss of Sunday morning's activity - and I apologise to those folk who were looking for me - I prefer to remember the fun that was had on the Saturday evening. It's a good antidote for the depressing influence of Sunday's experiences!

Looking forward now to the VK4 Microwave Activity Day at the end of July, as well as the Spring VHF-UHF Field Day contest later in the year!

VK3 Microwave Test Day - 10th November

Following on from last year, early planning is in progress for another VK3 Microwave Test Day, again to be held at the EMDRC Club Rooms. Tentative date is Sunday November 10th, avoiding the Cup 'long' weekend and comfortably before the Spring VHF-UHF Field Day on November 23rd/24th (subject to the federal election). We're planning some different activities this time.

So, get to work on that microwave gear, ready for Test Day.

77 GHz new world record

Following on with the theme of 77 GHz activity, US amateurs have claimed a new world record on that band.

On June 13, Bob Johnson KF6KVG and Goran Popovic AD6IW had a successful QSO over a distance of 252.49 km. Bob was on Mt Hamilton, just east of San Jose while Goran was in Kings Canyon National Park. The contacts were made on FM and SSB with strong signals at both ends.

The previous record distance was 228 km from DL2AM and DL2GWZ.

Bob's equipment produces 100 mW to a 300 mm dish and used a locked DRO oscillator for excellent stability. Goran runs 120 mW to a 600 mm dish, again using a DRO oscillator locked to 10 MHz. Gorans's dish has a gain of 50 dB and a beamwidth of 0.3 degrees, so alignment must have been a little tricky.

It's worth noting that, as discussed in an earlier column, the band 77.5-78 GHz is under consideration at WRC 2015 for an allocation for automotive short-range radar, leaving the fate of the amateur primary allocation uncertain.

Please send any Weak Signal reports to David VK3HZ at *vk3hz@wia.org.au*

Digital DX Modes

Rex Moncur VK7MO

Meteor Scatter by Kevin VK4UH

The winter solstice and the absence of any significant meteor showers in June marks the low point for the Meteor Scatter propagation calendar, at least in the southern hemisphere. Despite this interstate and trans-Tasman contacts have been made throughout the month, in and out of the normal Saturday/Sunday morning activity sessions, albeit with patience and perseverance.

Here in SE VK4 I am still waiting to hear my first decodable 'ping' from ZL. Interestingly, from here all the major west-coast ZL cities are at a similar distance, all close to the magic 2500 km, the effective maximum distance obtainable without some form of propagation enhancement at one or both ends of the path. There is a regular Saturday morning VK-ZL MS activity session on 144.330 from 2000 to 2100 UTC. I'm there most sessions and regularly see stations not that far south of me making contacts across the ditch. Although close to the theoretical limit this path should be possible for us with a bit of Tropo or Es enhancement on the path.

Reviewing the VK Logger MS reports for June most stations have experienced a low return rate, with 'pings' being faint, infrequent and of short duration. Difficult conditions for the FSK441 mode. Southern state stations aiming north appear to have been experiencing better results than those in the north beaming south. Certainly there are now more VK4s operating each weekend than from the southern call areas, so there are more pings to see in the south, but the return rate to the north has seemed poor even allowing for that. Could an element of one-way enhancement exist?

It was gratifying to see some new callsigns appearing last month. The special event station VK100ACT, operated by Waldis VK1WJ was worked by many and welcome to Rob VK1KW, new to MS and to the 'learning curve' of FSK441.

The poor general conditions, especially with short pings less than 100 ms, have given the opportunity to trial the new MS mode JTMS that was mentioned in last month's column. At least nine VK stations have gained some experience and success with the mode. Activity has mostly been before or in parallel with the normal Sunday activity session but on 144.330 – since the two modes are incompatible on the same frequency. Although there are some differences to master with JTMS, in particular the 'S' setting being quite critical, most stations are finding better decode rates with very short pings albeit allowing for more on-screen garbage and partial decodes being common. Here I have been able to complete with the same stations using both modes in a single session and usually the time required is shorter with JTMS during these challenging conditions.

The other strategy available for conditions like this month is the use of Short Text (Single Tone) or 'ST' in FSK441. Since not everyone may be familiar with this option I thought it timely to describe it here. To enable Short Text 'ST' it is necessary to check the STTx and STRx boxes on the WSJT Consul screen in FSK441 mode. Doing so allows the program to send and detect single tones in place of the normal 'machine-gun modulation' for the Text windows Tx3, Tx4 and Tx5. These windows are usually used for Report (example R26), RRR, and 73 respectively.

There are four possible ST messages: - R26 represented by a pure 882 Hz tone, R27 – 1332 Hz, RRR – 1764 Hz and 73 – 2205 Hz (These being the four component tones used by FSK441).

To use this option to make a valid MS contact there are a few points consider. Firstly there is no modulation or identification of the transmitted signal just a single tone, that is, a single transmitted carrier, and only its frequency conveys information. Consequently there must be a 2-way exchange of callsigns before ST can be used. Secondly since there is nothing to identify the source or destination of the signal there can only be the two stations operating on that frequency at that time. So ST cannot be used during normal activity sessions where there may be other stations transmitting and receiving otherwise total confusion will reign. Either a different frequency or a different time slot must be used. Remember also that any carrier or birdy near one of the signal tones will be decoded as the message so false decodes can occur.

For those who might question the validity of 'ST' bear in mind that in JT65, used for EME, then the equivalent RO, RRR and 73 reports, required to make a valid contact, also do not contain any other identifying information.

When ST is used there must be no callsign typed in the text window used, only one of the four allowable messages as above. If correct the window will change colour from yellow to blue and if monitored only a single audio single tone will be heard. On receive; even the shortest return (ping) of one of the four allowable tones will be decoded on screen. Thus providing a significant dB and duration advantage over normal FSK441.

So in short, ST has advantages in completing a difficult QSO BUT callsigns must have been received in both directions first, the frequency (DF) needs to be close and there can't be any other stations transmitting on that frequency. Like all things digital this needs a bit of practice to get right. Give it a try on a quiet frequency, often you will see a decode on a ping that it was hard to hear at all.

New Version of VK1XX's EME Doppler Correction program

Glen VK1XX has added a half-self-Doppler setting to his program which can be downloaded at: *www.vk3hz.net/microwave/doppler141.zip*

If the half-self-Doppler setting is invoked by all stations this gives a constant frequency on the Moon. With this setting it is possible to use a single focus frequency of, say, 10368.225 MHz and all stations will appear on the same frequency on the waterfall independent of their location on Earth. Tests of the new feature between G3WDG and VK7MO on 10 GHz have shown frequency errors of less than 20 Hz.

Please send any Digital DX Modes reports to Rex VK7MO at *rmoncur@bigpond.net.au*

The Magic Band – 6 m DX

John McRae VK5PO

This report is compiled from back home, here in Lewiston. Great to catch up with many stations in the US and Canada. My simple full wave loop and IC-7000 worked very well on six metres.

The place to *still* be is DARWIN, as yet another VK8AW log will show. VK8MS also worked many stations, but a report was not received from Marc this time. VK8RR snared a few stations also.

Gary VK8AW writes:

June has seen a few openings into eastern and southern Europe on six metres from up here in Darwin.

Early in June, six metres was rather lacklustre, but on the 22nd, from 1104Z through to 1132Z, worked on CW where these stations: UK8FF, UR5QU, UR5MID, LZ2WO, US4EX, UT9FJ, UX0UN, UT7QF, YO3DDZ and the band quietened down as I managed to get UT4EEH into the log.

The 24th saw a more widespread opening, and using CW, these stations were worked between 1107Z and 1250Z. Nearly two hours of activity prevailed.

LZ1QI, SV2DCD, I4EAT, SV8CS, IK4WMA, S57BVM, I7CSB, HA5CW, IZ8MWG, HA5FW, IW0FFK, SV8RX, I4MKN, IK0FTA, IW0GBU, IK4GME, IK0MS, IZ0DZM, IZ7SE, I6WJB, IZ7FLS, SV2CXW and, to finish off, I2WDX was the lucky last that I put into my log at 1250Z.

On the 25th, one solitary station was worked at 1111Z. UT5URW in Ukraine.

Some winter 'E's' are more commonplace, the 25th was lively, with a widespread opening from VK5 to FK8, VK2,4,3 and even VK6. VK6KXW was 599+ on CW, a real surprise! VK3 and VK7 into VK4 on the same day.

On the 27th, VK2ZQ heard the VK8VF beacon at Darwin at 0450Z, and at 0500Z snared VK8RR on SSB with 55 reports both ways.

The southern Aurora was prevalent on the 29th June, with stations at lower latitudes able to complete QSOs. VK5DK, VK3ZAZ, VK3DUT, VK3OE, VK3GHZ, VK7DX and VK7DD all made contacts between each other with this phenomena.

It is very refreshing to see many more VK stations using the domestic calling frequency of 50.200, and lots of stations calling, then QSY to complete a QSO. This is great, as it is highly likely there may be some EU DX in the coming months, and it is really imperative that 50.110 be kept clear for ease of hearing and calling DX stations. It can, and will mean some will miss out on the rare DX if VK stations are calling other VK stations on 50.110. Please encourage others to observe the sanctioned Band Plan, so we all can enjoy any opportunities that arise. Good DX!

Please submit reports, logs or other info you may consider useful to John VK5PO at *vk5po@wia.org.au*

Spotlight on SWLing

Robin Harwood VK7RH
vk7rh@wia.org.au

August is here and spring is just around the corner. I am certainly looking forward to the warmer weather, after a particularly cold, bracing winter. Propagation has been quite unpredictable here and I have been relying increasingly on remote receiving locations, such as Globetuners and the excellent Perseus site at the University of Twente, near Eindhoven in Holland. I do expect that receiving conditions should pick up in the southern hemisphere now with the arrival of spring.

You may recall the mention of WYFR and the failed prediction of Harold Camping that the World would end on May 21st, 2011 and a later revised calculation when it failed to eventuate. Within days of the predicted non-event, Camping suffered a stroke and has been in a nursing home ever since. Gradually programs began to be reduced as funding started to dry up. It quickly escalated and overseas relays on WYFR were quietly terminated. On Saturday June 30th WYFR made its final transmission from the Okeechobee site in Florida. Camping used to dominate the transmissions yet his sermons and talks were withdrawn very quickly after the failed predictions. The closure of Okeechobee has also meant that relay transmissions of Radio Taiwan International to the Americas also ceased on the same date.

Incidentally Radio Taiwan International also has cut back its usage of shortwave, after bean counters determined that the listening audience was smaller than earlier estimates. Programs to mainland China also have been reduced. However a separate section of the broadcasting organisation in Taipei has been primarily responsible for these transmissions and administration of RTI has been mainly concentrating on programming outside of mainland China. RTI also decided to phase out ageing senders within Taiwan. The clandestine transmissions of Falun Gong are illegal even in Taiwan and that is why their senders are comparatively low powered and easily drowned out by Chinese jammers, who no longer employ loud percussion music, opting for relays of domestic networks.

The Global Financial crisis has severely affected many European countries, forcing the implementation of severe austerity measures that have become extremely unpopular. Greece and Cyprus have experienced the brunt of these decisions, generating social unrest and disorder. In June, the Government in Athens suddenly decided to close down the ERT, the public broadcaster, similar to the ABC. This decision caused considerable upheaval as 8,000 employees found themselves unemployed and naturally they barricaded themselves in the studios and continued broadcasting in defiance of the government. You also may recall that the external arm of ERT had already reduced the number of hours of their shortwave senders. When the upheaval erupted, the senders continued around the clock for many weeks. The programming seems to have been mainly relaying programming of the Internet from the strikers and supporters from the domestic ERT networks. I believe that the government unsuccessfully tried to sabotage the landline links between the studios and the various senders.

9420 provided the best signals here into Australia, closely followed by 15630. Programming is continuing, following a court ruling that the original decision was illegal. Politically, a stalemate remains with the final decision resting with the Greek parliament. Apparently it is a coalition government and the minority partners favour the retention of the existing ERT. This continuing stalemate may still result in an election as other issues have arisen as a result of the unrest and social dislocation of the financial crisis.

I recently came across a heavily distorted signal on 13850 kHz. I found it extremely difficult to identify the station as the modulation was in excess of 100%. The signal was very wide and spurs were heard for hundreds of kilohertz on either side. Looking up online databases, it quickly turned out to be Egypt. I am certain and indeed aware that there have been numerous complaints made but they have largely been ignored. If there was an audience, they presumably have given up as the same senders are also notorious for transmitting open carrier with very little modulation.

Well that is all for now.

73 and good monitoring de VK7RH.

DX-News & Views

Chris Chapman VK3QB and Luke Steele VK3HJ
e *vk3qb@wia.org.au*

June and July on the bands

The sun was not quite as active in June as it was in May, with just a handful of M-class flares, but the geomagnetic conditions were quite turbulent with periods of storms. Higher bands were patchy, but there was still some choice DX to be had for the vigilant. 20 m has usually been open to Europe and Africa on the long path mid-afternoon, and 30 m has been offering DX even in the middle of the day. The All Asia DX Contest (15/16 June) saw a lot of activity on 15 m.

Early in June, Hans PB2T was on air in Ghana as 9G5AA. Hans is President of IARU Zone 1 and was in Ghana working with the authorities to set up licensing processes. So hopefully, we will see more activity soon from Ghana.

Alain TR8CA is very active on air from Gabon. Roger ZS6RJ was operating in Botswana as A25RJ for a week in June, and plans to return in September.

Svein LA9JKA is operating from Bear Island as JW9JKA until mid-December. Bear Island is part of Svalbard for DXCC, but is a separate counter for CQ Awards. Some people have had their direct QSLs returned 'unknown address' for his earlier Jan Mayen JX9JKA activation. It may be prudent to wait until Svein returns to Norway before sending your direct QSL.

There were a number of IOTA activations, including several Solomon Islands, Indonesia, Cuba, Honduras, Alaska, and Norway, amongst quite a few European islands. The northern summer sees a lot of IOTA activity, while the number of DXCC activations drops markedly.

Some upcoming DX operations

The following table summarises some of the DX activations that may be of interest to VK operators.

Date	Call	QSL via	Information
27 Jul – 3 Aug	V29SH	LoTW	Antigua, (NA-100). HF.
27 Jul – 9 Aug	OY/DL3UB	DL3UB	Faroe I, (EU-018). WARC bands, CW.
2 – 9 Aug	GJ/OT9Z	ON8ZL	Jersey, (EU-013). 160 – 6 m, SSB, CW, PSK, RTTY.
3 – 4 Aug	TO1PF	FR1GZ	Reunion (AF-016). HF, all modes.
16 – 20 Aug	OX5YL	PA5YL	Greenland, (NA-018). 160 – 6 m.
21 – 26 Aug	9H3MMM, 9H3NN	LoTW	Malta, (EU-023). Gozo I, 40-10 m, all modes.

Thanks to the NG3K website, and the QRZ DX and Daily DX newsletters for their information.

V29SH, **Antigua**. Tim VE6SH will be operating from Jumby Bay I on HF, using an Elecraft KX3 and amplifier, with a Buddipole antenna. This will be a holiday style operation. QSL also OK via VE6SH, bureau or direct.

OY/DL3UB, **Faroe I**. Ulf DL3UB will be focusing on 30, 17 and 12 m using CW, while on holidays in the Faroe Islands, in the far North Atlantic Ocean between Scotland and Iceland.

GJ/OT9Z, **Jersey**. Operators ON8ZZ, ON8ZL, and ON5NQ will be at La Moye. They will be on 160 – 6 m, SSB, CW, PSK and RTTY. QSL via ON8ZL, bureau or direct.

TO1PF, **Reunion.** A French team will be operating again from Piton de la Fournaise, the peak of an active volcano, at an elevation of 2,632 m. They will be on HF, all modes.

OX5YL, **Greenland**. Operators JR3MVF, HL1KDW, LA6RHA, WA0WOF and SM6KAT will be on air from Kangerlussuaq, 160 – 6 m. QSL via PA5YL.

9H3, **Malta**. KE1B as Rich 9H3MMM and Anna W6NN as 9H3NN will be on air from Gozo I, 40 – 10 m, all modes. This will be a holiday style operation using 100 W rigs and Buddipole antennas.

CQ DX de VK9NT/qrp

This month we'll take a slight diversion and recount one of the highlights of the recent VK9NT DXpedition to Norfolk Island.

The team took an Elecraft KX-3 HF/6 metre radio as a backup radio. It was also planned that, subject to local conditions, two members of the team would activate Mt Bates for the Summits on the Air (SOTA) program (more on our SOTA activation next month).

In preparation for the ascent to Mt Bates, Brenton VK3CBV and Chris VK3QB constructed a simple forty metre half wave dipole and fed it with some left over open wire line – a combination of 450 ohm heavy duty line and some 300 ohm TV ribbon – not exactly high tech, but certainly a proven low loss design;

and being limited to 10 watts we figured this antenna would best suit our requirements. To test the system, we erected the antenna between two Norfolk Pines – about 15 metres high and about 10 metres back from the cliff (110 m ASL) on the NE corner of the island and about 300 metres from the main VK9NT station. An enviable position for a dipole antenna, 10 metres back from the cliff which dropped about 110 metres into the Pacific Ocean.

Surprisingly, it took only a few minutes of calling CQ on 18 MHz CW before we got a response. With 10 W we did not expect a booming signal from the little KX-3 running off the lawn mower battery we 'repurposed'. However, we quickly attracted a fair pileup and proceeded over the next 30 minutes to work about one station per minute.

As the sun was setting and it was getting cold we decided to wind up the test and move back into the relative warmth of the main building. Brenton made a passing comment that we should wind back the transmitter power and see how QRPp would perform.

Over the next 5-10 minutes we gradually decreased transmitter output from 10 W to 5 W, 2 W and finally 1 W. The pileup did not abate and stations kept responding to our calls in an orderly manner – indicating that they were certainly hearing our signal. We continued winding back the power… How did we fare?

On 7th May at 0547 UTC VK9NT, transmitting 100 mW into a 40 m dipole, worked N6WM (~10,500 km), JH1PIN (~7,000 km) and RD0L (8,100 km). This works out to be about 100,000 km/watt. This exercise shows the incredible benefits of operating a simple low power station beside the ocean – and being 120 m ASL probably didn't hurt either. It certainly was a load of fun.

Special thanks to the authors of The Daily DX, 425 DX News, DX World, NG3K's Announced DX Operations, and QRZ.DX for information appearing in this month's column. Interested readers can obtain a free two week trial of The Daily DX from *www.dailydx.com/trial.htm*

VK5news Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

AHARS continues to have interesting speakers at their meetings. In June it was Leigh VK5KLT. Leigh lives in a unit in North Adelaide where there is no simple place to put up an antenna. So instead of having a mast or tower on the ground Leigh looked at a rooftop site.

His antenna(s) are mounted 30 metres above the ground on a flat roof. He opted for a commercial vertical with coils and capacitors at the appropriate intervals giving him several different bands. Despite the expected problems of excess noise usually associated with vertical antennas, Leigh's is almost noise free. He has the antenna mounted on a thick stainless steel square, which in turn is sitting on a flat copper roof and has 64 heavy copper wires (he used standard green/yellow insulated earth wires here) that radiate out to all points of the compass. The wires are not of a regular length, simply as long as necessary to reach the edge of the roof. The roof over Leigh's unit (in the middle of three buildings) is firmly bonded to the two roofs on either side, adding to the ground plane effect of the 64 radial wires.

With this antenna Leigh has excellent, noise free reception and transmission on 10, 15, 20 and 40 metres. For 80 metres he uses a loop antenna and also has alternative loop antennas for some of the others bands, as well as some more standard VHF antennas.

Starting 30 metres up and with a site on top of a hill, Leigh gets excellent signal reports from all round the world. To make it even better, the antennas are almost invisible from the ground because they are in the middle of a high roof. The technical details and diagrams made this an interesting talk and have probably inspired some new ideas among the members.

AHARS continues to hold their breakfasts in each month with five Saturdays in it, often followed by an auction, and the regular fortnightly technical talks at 'The Shack'.

The most recent talk there was from John Elliott VK5EMI on 'QSLing past present and future.'

Don't forget the Remembrance Day Contest on 17/18th August and the ALARA contest the following weekend.

The Club will be operating a station from the Cape Willoughby Lighthouse on Kangaroo Island for the Remembrance Day Contest weekend, which has the ILLW on the same weekend, and will also activate a Conservation Park station. As well, Kangaroo Island is a sought after Island on the Air site. Callsigns in use will be VK5BAR and VK5CWL. Operators VK5PAS, VK5ATW, VK5BUG, VK5UG, VK5AJQ, VK5FJOE, VK5NRG and VK5KC all look forward to contacting you. A special QSL card will be produced.

Gridsquare Standings at 14 June 2013

Guy Fletcher VK2KU

144 MHz	Terrestrial	
VK2FLR	Mike	120
VK3NX	Charlie	107
VK2KU	Guy	102
VK3HZ	David	93
VK3PF	Peter	90
VK2ZT	Steve	86 SSB
VK5AKK	Phil	85 SSB
VK3PY	Chas	82 SSB
VK2DVZ	Ross	79 SSB
VK2ZAB	Gordon	78 SSB
VK3BDL	Mike	76 SSB
VK2AMS	Mark	71
VK3BJM	Barry	70 SSB
VK3QM	David	69 SSB
VK7MO	Rex	67
VK3AKK	Ken	64 SSB
VK2TK	John	62
VK3WRE	Ralph	60 SSB
VK3PF	Peter	56 SSB
VK3KH	Michael	55 SSB
VK3HY	Gavin	54
VK2MER	Kirk	52 SSB
VK3ZLS	Les	51 SSB
VK4CDI	Phil	51
VK4CDI	Phil	47 SSB
VK7MO	Rex	47 SSB
VK7MO	Rex	46 Digi
ZL3TY	Bob	46
VK3EJ	Gordon	40 SSB
VK3PF	Peter	40 Digi
VK2TG	Bob	39 SSB
VK3UH	Ken	38
VK2TK	John	35 SSB
VK3ZUX	Denis	33 SSB
VK3DXE	Alan	32
VK1DA/p	Andrew	31
VK3DXE	Alan	31 SSB
VK1WJ	Waldis	29
VK4KSY	David	28 SSB
VK2TK	John	27 Digi
VK1WJ	Waldis	25 Digi
VK3KH	Michael	25 Digi
VK4CDI	Phil	25 Digi
VK3TLW	Mark	24
VK4EME	Allan	23
VK3ALB/p	GARC Team	22 SSB
VK6KZ	Wally	20
VK2ZT	Steve	19 Digi
VK4EME	Allan	19 SSB
VK3AL	Alan	18 SSB
VK6KZ/p	Wally	16
ZL3TY	Bob	15 Digi
VK2DVZ	Ross	14 Digi
VK2AMS	Mark	13 Digi
VK4EME	Allan	13 Digi
VK5APN	Wayne	13
VK4AE	Denis	9 SSB
VK1WJ	Waldis	7 SSB
VK5APN	Wayne	7 Digi
VK5APN	Wayne	7 SSB
ZL3TY	Bob	7 CW
VK1WJ	Waldis	5 CW
VK3DXE	Alan	5 Digi
VK4KSY	David	5 Digi
ZL1UJG	Kevin	5 SSB
ZL1UJG	Kevin	5 Digi
VK3DXE	Alan	4 CW
VK3QM	David	1 Digi

144 MHz	EME	
VK2KU	Guy	479
VK2KU	Guy	465 Digi
ZL3TY	Bob	424
VK3AXH	Ian	343 Digi
VK4CDI	Phil	304
VK5APN	Wayne	253
VK5APN	Wayne	248 Digi
VK7MO	Rex	157 Digi
VK2DVZ	Ross	120 Digi
VK2FLR	Mike	120
VK3KH	Michael	61 Digi
VK2KU	Guy	44 CW
VK2ZT	Steve	28 Digi
VK3BJM	Barry	22 Digi
VK3HZ	David	19
VK5APN	Wayne	17 CW
VK3DXE	Alan	16 Digi
VK3NX	Charlie	5 CW
VK4EME	Allan	5 Digi
VK3AXH	Ian	3 CW
VK2DVZ	Ross	2 CW
VK3AXH	Ian	1 SSB

432 MHz	Terrestrial	
VK2ZAB	Gordon	57 SSB
VK3PY	Chas	53 SSB
VK3QM	David	52 SSB
VK3NX	Charlie	50 SSB
VK3HZ	David	42
VK3ZLS	Les	40 SSB
VK3BJM	Barry	39 SSB
VK5AKK	Phil	39 SSB
VK2KU	Guy	38
VK2DVZ	Ross	35 SSB
VK2ZT	Steve	35 SSB
VK3BDL	Mike	35 SSB
VK3AKK	Ken	34 SSB
VK3WRE	Ralph	34 SSB
VK3PF	Peter	32
VK3PF	Peter	30 SSB
VK1DA/p	Andrew	24
VK3KH	Michael	22 SSB
VK7MO	Rex	21
VK2AMS	Mark	19
VK7MO	Rex	19 SSB
VK2TK	John	18
VK3ALB/p	GARC Team	18 SSB
VK2TK	John	17 SSB
VK4CDI	Phil	17
VK4CDI	Phil	17 SSB
VK3HY	Gavin	15
VK3TLW	Mark	15
VK3ZUX	Denis	15 SSB
VK2MER	Kirk	13 SSB
VK6KZ	Wally	13
VK2TG	Bob	11 SSB
VK3AL	Alan	10 SSB
VK3UH	Ken	8
VK4CDI	Phil	8 Digi
VK6KZ/p	Wally	8
ZL3TY	Bob	8
VK3KH	Michael	7 Digi
VK4AE	Denis	7 SSB
VK7MO	Rex	7 Digi
VK2DVZ	Ross	6 Digi
VK4EME	Allan	6 SSB
VK1WJ	Waldis	5 SSB
VK2ZT	Steve	4 Digi
VK3PF	Peter	4 Digi
VK3PY	Chas	4 Digi

VK3QM	David	4 Digi
VK2AMS	Mark	3 Digi
VK3DXE	Alan	3 SSB
VK2TK	John	1 Digi

432 MHz	**EME**	
VK4EME	Allan	74
VK4EME	Allan	69 Digi
VK4CDI	Phil	52
VK4CDI	Phil	52 Digi
VK4EME	Allan	10 CW
VK7MO	Rex	10
VK7MO	Rex	9 Digi
VK3NX	Charlie	5 CW
VK3AXH	Ian	4 Digi
VK3HZ	David	4
VK3KH	Michael	3 Digi
VK3NX	Charlie	3 Digi
VK2ZT	Steve	2 Digi
ZL3TY	Bob	2 Digi
VK4CDI	Phil	1 CW

1296 MHz	**Terrestrial**	
VK3PY	Chas	42 SSB
VK3QM	David	42 SSB
VK3NX	Charlie	40 SSB
VK2ZAB	Gordon	29 SSB
VK3AKK	Ken	28 SSB
VK2DVZ	Ross	27 SSB
VK3ZLS	Les	26 SSB
VK5AKK	Phil	26 SSB
VK2KU	Guy	25
VK3BJM	Barry	22 SSB
VK3PF	Peter	22
VK3BDL	Mike	21 SSB
VK3WRE	Ralph	21 SSB
VK3PF	Peter	20 SSB
VK3HZ	David	19
VK3KWA	John	19
VK3KH	Michael	17 SSB
VK3ALB/p	GARC Team	16 SSB
VK2ZT	Steve	14 SSB
VK7MO	Rex	12 SSB
VK1DA/p	Andrew	10
VK2TK	John	10 SSB
VK2AMS	Mark	9
VK3HY	Gavin	8
VK3TLW	Mark	8
VK3AL	Alan	7 SSB
VK3UH	Ken	7
VK2MER	Kirk	6 SSB
VK3ZUX	Denis	5 SSB

VK4CDI	Phil	5
VK4CDI	Phil	5 SSB
VK6KZ/p	Wally	5
VK3KH	Michael	4 Digi
VK6KZ	Wally	4
VK2TG	Bob	3 SSB
VK4AE	Denis	3 SSB
VK4EME	Allan	3 SSB
VK7MO	Rex	3 Digi
VK2DVZ	Ross	2 Digi
VK3PF	Peter	2 Digi
VK3QM	David	2 Digi
VK4CDI	Phil	2 Digi
VK2ZT	Steve	1 Digi
ZL3TY	Bob	1 SSB

1296 MHz	**EME**	
VK4CDI	Phil	97
VK4CDI	Phil	80 Digi
VK3NX	Charlie	66 CW
VK7MO	Rex	41
VK7MO	Rex	36 Digi
VK4CDI	Phil	35 CW
VK2DVZ	Ross	32 Digi
VK2AMS	Mark	31 Digi
VK3AXH	Ian	14 Digi
VK3NX	Charlie	4 SSB
VK4CDI	Phil	4 SSB
VK2MER	Kirk	3 Digi
VK2AMS	Mark	1 SSB
VK2DVZ	Ross	1 SSB

2.4 GHz	**Terrestrial**	
VK3NX	Charlie	28 SSB
VK3PY	Chas	28 SSB
VK3QM	David	28 SSB
VK3AKK	Ken	25 SSB
VK3WRE	Ralph	12 SSB
VK3ALB/p	GARC Team	7 SSB
VK3BJM	Barry	7 SSB
VK3PF	Peter	7 SSB
VK3KH	Michael	6 SSB
VK3HZ	David	5
VK6KZ	Wally	4
VK3KH	Michael	3 Digi
VK3ZUX	Denis	3 SSB
VK1DA/p	Andrew	2
VK2AMS	Mark	2
VK3PF	Peter	2 Digi
VK2DVZ	Ross	1 SSB
VK3TLW	Mark	1
VK4EME	Allan	1 SSB

2.4 GHz	**EME**	
VK3NX	Charlie	44 CW
VK7MO	Rex	14
VK7MO	Rex	10 Digi
VK3NX	Charlie	8 SSB

3.4 GHz	**Terrestrial**	
VK3NX	Charlie	26 SSB
VK3QM	David	26 SSB
VK3AKK	Ken	22 SSB
VK3PY	Chas	22 SSB
VK3WRE	Ralph	8 SSB
VK3PF	Peter	6 SSB
VK6KZ	Wally	4
VK2AMS	Mark	3
VK4CDI	Phil	3 SSB
VK2AMS	Mark	1 Digi
VK2EM	Bruce	1 SSB

3.4 GHz	**EME**	
VK3NX	Charlie	22 CW
VK3NX	Charlie	3 SSB
VK4CDI	Phil	3 CW

5.7 GHz	**Terrestrial**	
VK3NX	Charlie	25 SSB
VK3QM	David	25 SSB
VK3AKK	Ken	23SSB
VK3PY	Chas	23 SSB
VK3WRE	Ralph	9 SSB
VK3PF	Peter	7 SSB
VK3ALB/p	GARC Team	6 SSB
VK6KZ	Wally	4
VK2AMS	Mark	2
VK3BJM	Barry	2 SSB
VK3PF	Peter	2 Digi
VK3ZUX	Denis	1 SSB

5.7 GHz	**EME**	
VK3NX	Charlie	36 CW
VK3NX	Charlie	4 SSB

10 GHz	**Terrestrial**	
VK3HZ	David	74
VK3HZ	David	33 SSB
VK3NX	Charlie	31 SSB
VK3PY	Chas	28 SSB
VK3QM	David	28 SSB
VK3AKK	Ken	26 SSB
VK3PF	Peter	13 SSB
VK3WRE	Ralph	12 SSB
VK3HY	Gavin	9

VK3ALB/p	GARC Team	7 SSB
VK7MO	Rex	7
VK6KZ	Wally	5
VK7MO	Rex	5 SSB
VK2AMS	Mark	3
VK2EM	Bruce	3 SSB
VK3KH	Michael	3 SSB
VK3KH	Michael	3 Digi
VK3TLW	Mark	3
VK1DA/p	Andrew	2
VK3BJM	Barry	2 SSB
VK3UH	Ken	2
VK3ZUX	Denis	2 SSB
VK7MO	Rex	2 Digi
VK3NX	Charlie	1 Digi

10 GHz	**EME**	
VK3NX	Charlie	31
VK3NX	Charlie	26 CW
VK3NX	Charlie	5 Digi
VK7MO	Rex	5 Digi
VK3NX	Charlie	1 SSB

24 GHz	**Terrestrial**	
VK3HZ	David	19
VK3HZ	David	10 SSB
VK3QM	David	6 SSB
VK3AKK	Ken	5 SSB
VK3NX	Charlie	5 SSB
VK7MO	Rex	3 SSB
VK6KZ	Wally	2
VK3WRE	Ralph	1 SSB

24 GHz	**EME**	
VK7MO	Rex	2 Digi

47 GHz	**Terrestrial**	
VK3AKK	Ken	4 SSB
VK3NX	Charlie	4 SSB
VK3QM	David	4 SSB

76 GHz	**Terrestrial**	
VK3KH	Michael	1 SSB

122 GHz	**Terrestrial**	
VK3KH	Michael	1 SSB

474 THz		
VK3WRE	Ralph	3 AM
VK3HZ	David	2
VK7MO	Rex	2
VK7MO	Rex	2 Digi
VK7TW	Justin	2
VK7TW	Justin	1 Digi

Additions, updates and requests for the guidelines to Guy VK2KU.

The guidelines (and the latest League Table) are also available on the VK VHF DX Site at *http://vhfdx.radiocorner.net* - click on Gridsquares.

Next update of this table will close on or about 18 October 2013.

Stations who do not confirm their status for more than 12 months may be dropped from the table.

Remembrance Day Contest

Contest Manager Alan Shannon VK4SN
vk4sn@wia.org.au

August 17th and 18th 2013

This year the RD falls on the same weekend as the International Lighthouse weekend. Unfortunately the RD cannot be moved.

Lighthouse stations are welcome and encouraged to submit logs for the RD while having enjoyed both activities.

Contest Introduction

This contest commemorates the Amateurs who died during World War II and is designed to encourage friendly participation and help improve the operating skills of participants. It is held on the weekend closest to the 15th August, the date on which hostilities ceased in the southwest Pacific area.

It is preceded by a short opening address by a Guest Speaker transmitted on various WIA frequencies during the minutes prior to the contest. During this ceremony, a roll call of amateurs who paid the supreme sacrifice during WWII is read.

The perpetual trophy is ordinarily held by the WIA at its national office and is inscribed annually with the name of the winning State or Territory.

Aim of the Contest

Amateurs in VK, ZL and P2 will endeavour to contact other amateurs in VK, ZL and P2.

- VK, ZL, and P2 mean any station operating within Australia, New Zealand or Papua New Guinea and their external territories.
- Points are only awarded for valid contacts between VK, ZL and P2 stations.

This Year's Contest

August 17th and 18th 2013
Remember to send your Team nominations to the Contest Manager, anytime between now and the start of the contest: *vk4sn@wia.org.au*

If you wish to notify others that you will be on air, please notify the Contest Manager prior to the event. Detailed Rules can be found on the WIA website: *http://www.wia.org.au/members/contests/rdcontest/*

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Contests

James Fleming VK4TJF
e leartez@bigpond.com

Well here we are again, this time in the cold month of August and getting ready for that very quirky Aussie contest.

Yes you guessed it, the Remembrance Day Contest. This year it happens to fall on the same weekend as the International Lighthouse weekend, and nothing can be done about it, except to make a whole lot of cross contacts and increase the fun factor, If you are really good have two logs going at the same time. In this contest the aim here is to contact only VK, ZL and P2 stations. What, I hear you saying! Yes that is correct strictly no DX. The date is Saturday 17th August, starting at 0300 UTC and ending at 0259 UTC on Sunday 18th so, 24 hours long. Entry categories are single operator, and single operator QRP, multi operator single transmitter, and multi-multi. Modes for single operators are phone (AM, FM, SSB) CW, (CW and RTTY), and mixed. Bands available are, well, all of them, except for the WARC bands. You can even compete as teams of three operators without even being together. The exchange is RST plus how long you have been an amateur radio operator for, to the nearest whole year. There is also a section for those using WW2 ex-military equipment. Just to spice things up you can work everyone again every three hours. And of course the logging program to go with is the VKCL logging program.

So, with all these rules how is it best to compete in a contest like this? Well if you only wanted to do HF I suggest doing CW only, this I think would eliminate the VHF and UHF. I have not heard of many doing CW or RTTY on these bands. It also makes sense to use either full legal power or QRP. QRP should be fun for setting up portable in the bush. Thus if I was going out bush I would do CW on a doublet and QRP, this I think would be real fun. Or perhaps sit at home with my doublet and 100 watts, I think that might be enough to get me around Australia and work 80, 40, and 20 metres. Then perhaps team up with one of the guys in my radio club who is keen to do some VHF and UHF. Again it all depends on your operating style. This promises to be a real good weekend for radio. Australia leads the way in light house operations, thus there will be plenty of contacts to be made here. So I don't know about you but I will be packing up the sniffle gear and heading out bush to lie on some grass.

33rd ALARA Contest

Note: Contest is always on the last full weekend of August.

Eligibility

All licensed operators throughout the world are invited to participate. Also open to SWLs.

Object

Participation: YL works everyone, OMs and clubs work YLs only.
One contest (combined phone and CW) run over 20 hours.

Starts: Saturday 24th August, 2013 from 0400 - 1359 UTC.

Ends: Sunday 25th August, 2013 from 0400 - 1359 hours UTC.

Suggested Frequencies

Bands to be used are 3.5, 7, 14, 21, and 28 MHz only. The following are suggested frequencies for easier location of contacts:

28.380 to 28.410
21.170 to 21.200 and 21.380 to 21.410
14.250 to 14.280
7.070 to 7.100
3.560 to 3.590

Contacts made on EchoLink and two metres will also be accepted.

Operation

Single operator only (one operator per call sign).
NB: If YL is operating as a 2nd operator her husband/partner **cannot** participate in the contest.

Every individual phone or CW contact may be counted.

There must be an interval of greater than one hour between contacts with any one station on any one band and in the same mode.

No net or list operations.

No cross-mode operations.

No cross-band operations.

All contacts must be made in accordance with operator and station licence regulations.

Procedure

Phone: call 'CQ ALARA contest'.
CW: YLs call 'CQ test ALARA'.
OMs: call 'CQ YL'.

Exchanges

ALARA member: RS or RST, serial number starting at 001, ALARA member, name.

YL non-member, OM or Club: RS or RST, serial number starting at 001, name and whether YL, OM or a club station.

OMs, clubs and SWLs work YLs only.

Scoring

Phone: 5 points for ALARA member contacted.

4 points for YL non-member contacted.

3 points for OM or Club station contacted.

CW: All contacts made on CW count for double points.

OM, SWL and club: 5 points for ALARA member logged.
4 points for YL non-member logged.

Logs

Single log entry. Logs must show date/time UTC, band, mode, callsign worked, report and serial number sent, report and serial number received, name of operator of station worked, whether it is a club station, and points claimed.

Logs must be signed

Logs also to show full name, callsign and address of operator, and show final score (points claimed). Logs must be legible. No carbon copies. No logs will be returned. Decision of the Contest Manager will be final, and no correspondence will be entered into.

Logs must be received by the Contest Manager by *30th September, 2013.*

Sample Log

Date UTC	Time UTC	Band MHz	Mode	Callsign	RS(T) & Serial No. Sent	RS(T) & Serial No. Rcd	Name	Points
25/2012	0135	28	SSB	VK6DE	59001	58028	Bev	5
	0141	21	CW	VK3KS	599002	599045	Mavis	10
	0600	14	SSB	FK8FA	59025	59011	Aimee	5
	1103	3.5	SSB	VK3BSP	59130	59006	Joe (Club)	3

Contest Manager

Mrs Lesley Smit VK5LOL,
4 Perry Barr Road, Hallett Cove. SA. 5158. Australia.
Or to *alaracontest@wia.org.au*

Certificates will be awarded for the following:
Top score YL overall
Top score YL phone only
Top score YL EchoLink
Top score Australian YL CW
Top score DX YL
Top score ALARA member in each country and VK call area
Top score OM in each continent
Top score VK YL Foundation Licence holder
Top score overseas YL CW
Top score VK Club station

A **trophy** will be awarded to the following:
Top scoring Australian YL
Top scoring Foundation Licence ALARA member
The Top scoring VK non-ALARA member will be awarded one year's membership to ALARA.

Club Stations: Operators of club stations may use the club call only for contacts, and must identify each contact as with a club station. Use of personal callsigns while operating as a club member is not permitted. A club station will be recognized as such whether operators are YL or OM. If the club call is used, the score will be as a club station.

Please Note: This contest is always held on the last complete weekend of August.

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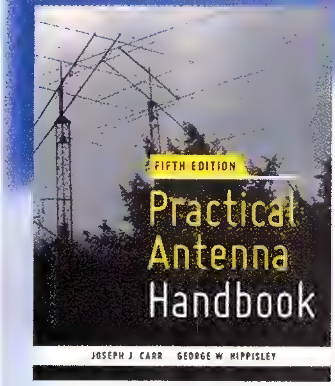

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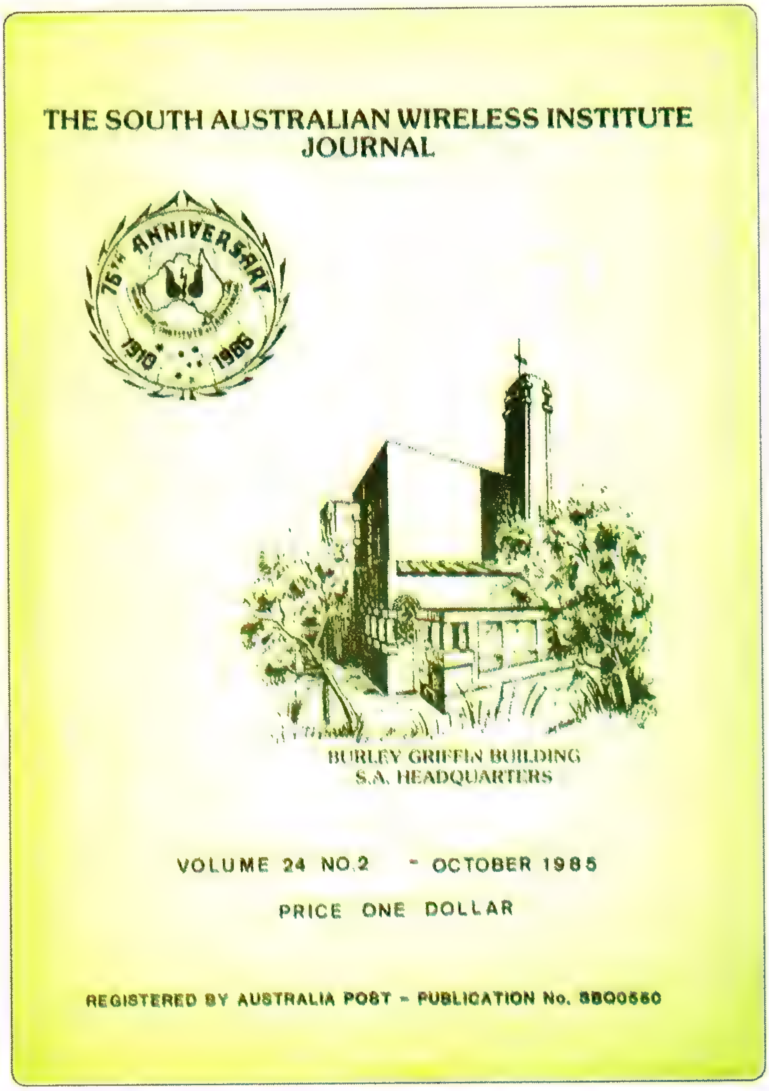

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VOLUME 24 NO.2 - OCTOBER 1985

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Copies of the VK5 Journal

The WIA Archive is particularly interested in locating magazines associated with the Institute in every State or Territory and would like to thank those who recently forwarded copies of the VK5 Journal. We are still seeking a few missing issues for copying and/or adding to the WIA Archive's shelves.

From the volume numbers, it appears that the Journal was published in Adelaide between 1959 and 2000. The format was printed, pages folded A4 (approx size) and stapled. The front cover design varied over the years.

We are particularly interested in locating the following issues:

Vol.20 No.2 1981, Vol.27 No.4 1989, Vol.29 No.2 1991, Vol.35 No1 1997, Vol.35 No.2 1997, Vol.37 No.1 1999 and Vol.37 No.3 1999.

The Archive would also like to locate any other earlier local journals which dealt with experimental or amateur radio in South Australia or claimed to be the official journal of the WIA in SA.

Please contact WIA Historian, Peter VK3RV via email *vk3rv@wia.org.au* or c/o the National Office in Bayswater if you can help us locate any of this material.

FOR SALE – VIC

Prolific USB [Serial] programming cable for Yaesu FT-8800/8900. This is new in original packing, and includes driver and application software for Mac or Windows. $60 plus extra $5 for posting to anywhere in VK.

Contact Tim VK3YBP QTHR, email *robinsont@pacific.net.au* or mobile 0412 495 079.

Yaesu desk microphone MD-100 as new but with transceiver end connector removed, $100. Katsumi EK-26 electronic keyer, clean and works OK $40.

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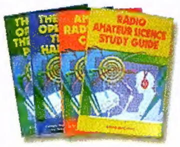

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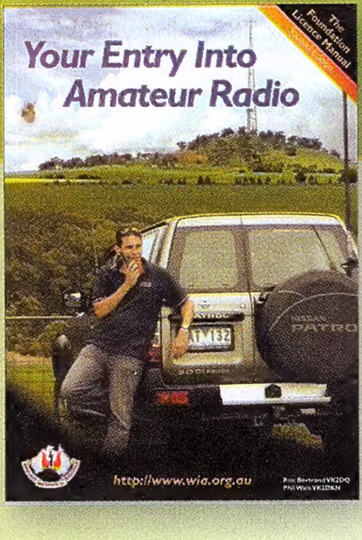
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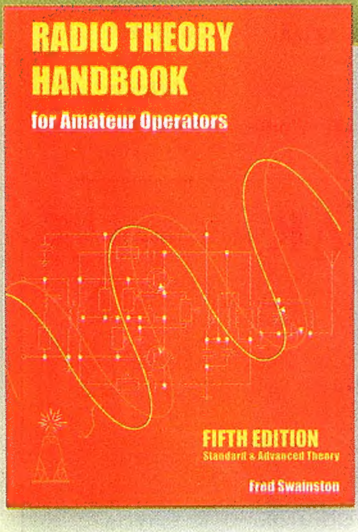

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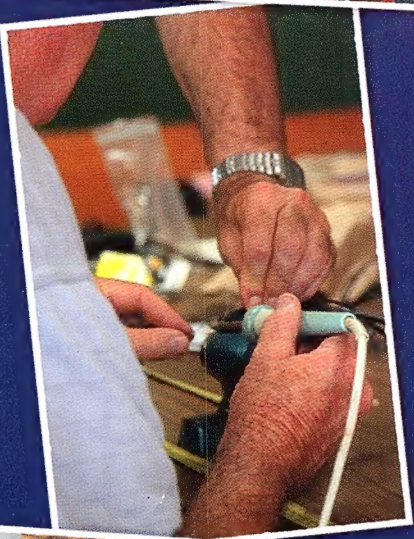

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